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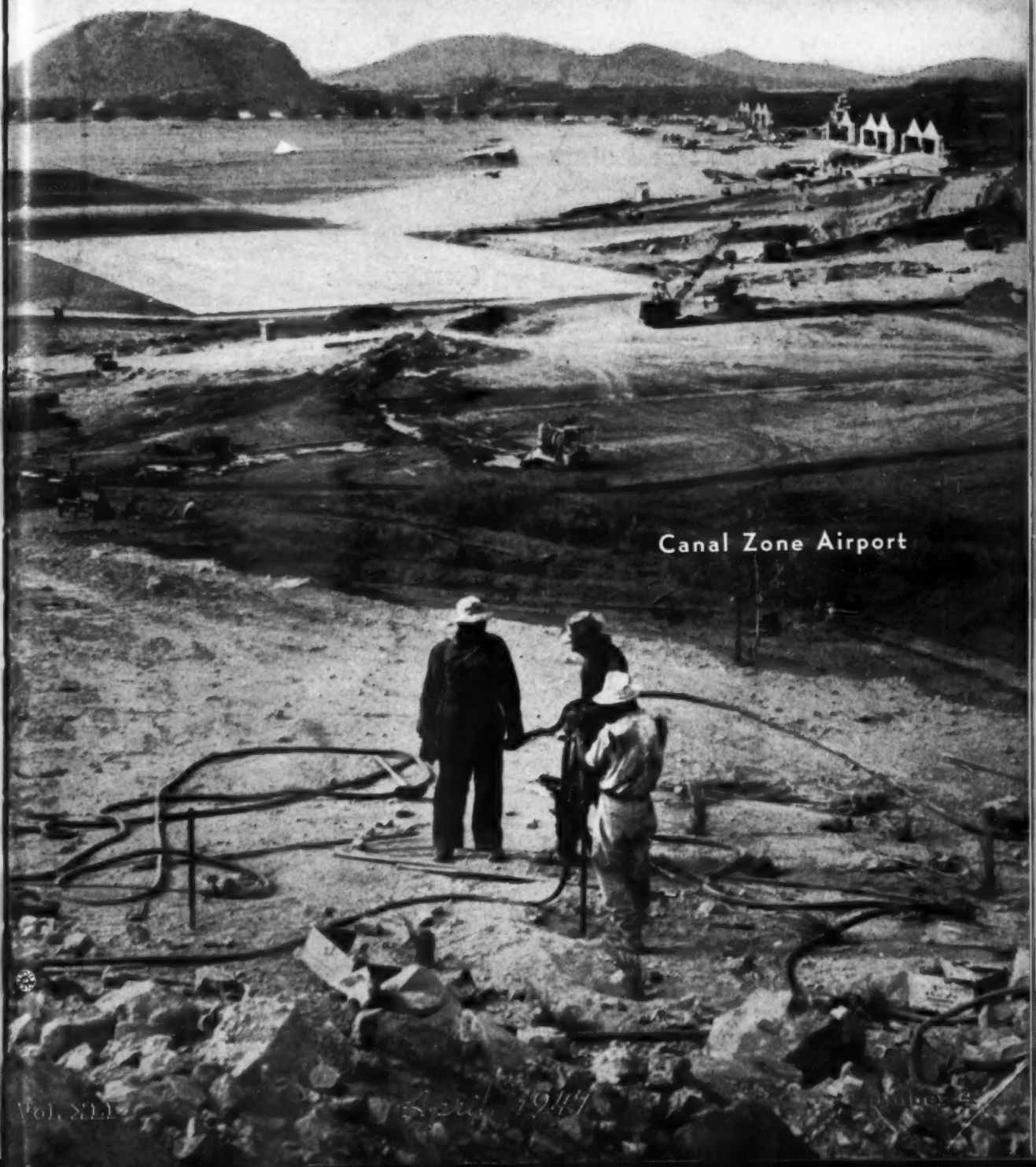


Canal Zone Airport

Vol. XLI April 1947 No. 4

WHAT'S LOW IN DRILLING COSTS?

Let Bucyrus-Erie Drills Show You!

Until you've investigated the economies that Bucyrus-Erie blast hole drills are giving owners everywhere, you can't appreciate the preparation savings possible on your operations. That's why it will pay you to watch Bucyrus-Eries in action — to see for yourself what's really low in drilling costs. Here are some of the things to look into:

Footage Drilled per Shift

The Bucyrus-Erie drilling motion, plus a derrick-head rubber shock absorber which imparts resiliency to wire line, concentrates the power of the drilling blow where it counts the most — at the bottom of the hole.

Maintenance Requirements

All-steel electric-welded construction keeps machinery enduringly aligned in the frame, resists the stresses encountered in long use. The shock absorber and rubber-insulated spudding beam and heel sheaves protect machinery from shock. All are factors which help cut maintenance to the bone.

Actual Drilling Time Each Shift

Caterpillar-type mountings provide fast sure moves; built-in jacks permit quick leveling; built-in tool wrenches (available on all except the 22-T) speed tool changes. Time savings here mean more time for drilling.

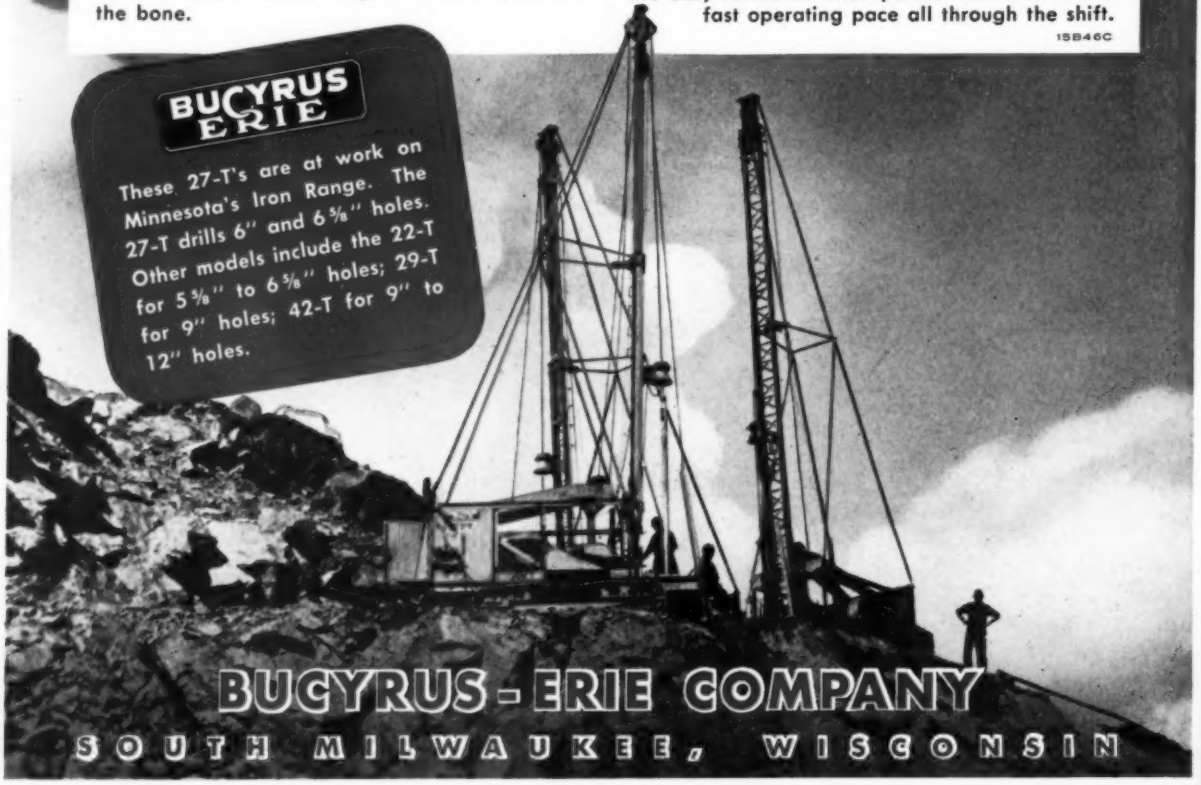
Operating Costs

Compact arrangement, efficient power flow, and careful workmanship result in smooth-running machinery that's easy on fuel.

Operating Ease

Both operating and propelling levers are grouped within easy reach of the operator when he stands at his drilling or propelling position. All levers are easy to move. The operator can maintain a fast operating pace all through the shift.

15B46C


BUCYRUS ERIE
These 27-T's are at work on Minnesota's Iron Range. The 27-T drills 6" and 6⅝" holes. Other models include the 22-T for 5⅝" to 6⅝" holes; 29-T for 9" holes; 42-T for 9" to 12" holes.

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

EXCAVATING ENGINEER

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On Our Cover

Key link in the airport chain connecting the American continents is Albrook Field, Canal Zone, shown (looking south) undergoing 1000 foot extension of the main runway involving a million cubic yards of excavating and earth moving. To complete the 7000 foot long by 250 foot wide runway, one hill must be leveled and another cut back — much of the excavation being in volcanic rock. Photo courtesy Caterpillar Tractor Co.

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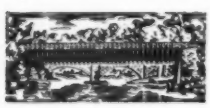
CONFIDENCE... how much is it worth?



IN 1844, three years before Alexander Graham Bell was born, and long before the first Prairie-Schooner crossed the Mississippi River, John August Roebling's confidence in the suspension principle of construction so impressed the engineers of the State of Pennsylvania, that they authorized him to build the world's first suspension aqueduct.

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And how much is the confidence of the John A. Roebling's Sons Company in the future of American industry worth to you, that keeps Roebling development and Roebling products in the lead?

Roebling's greatest asset is your confidence in Roebling and its confidence in your future. That is why Roebling's every effort is dedicated to the preservation of this confidence—yours and Roebling's.

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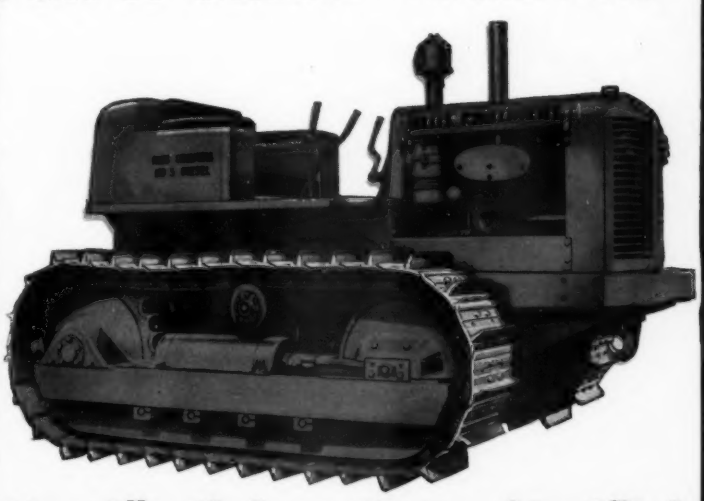

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- **Result of finest kind of cooperation between the various Allied manufacturers and the entire Allis-Chalmers organization, its dealers and users.**
- **Backed by the knowledge, experience, and facilities of each manufacturer . . . each skilled in his own field . . . each firmly established in his own right.**
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Yes, the HD-5 with any Allied unit is a fully matched power package . . . matched for greater output at lower cost.

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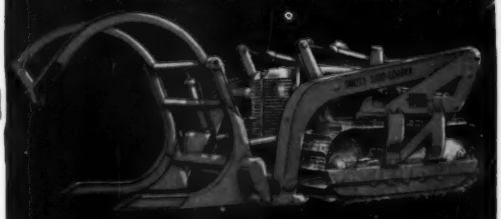

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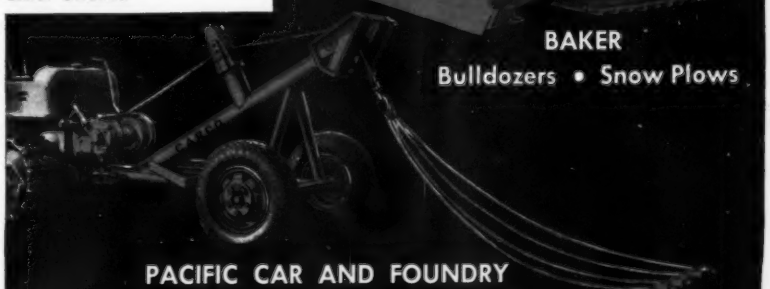

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Placer Platinum Mining

By JOHN C. HILL

Goodnews Bay Mining Co.

• The first excavating problem of each mining season, the removal of snow from the dredge pond, is being taken care of by this Bucyrus-Erie 1¼-cu. yd. dragline.

Goodnews Bay Mining Co. uses combination dredge, dragline, bulldozer and hydraulic methods to produce about ten per cent of the world supply of platinum and about one-third the world's iridium production.

THE PROCESS OF PLACER platinum mining, reduced to its simplest terms, is, as with all placers, a matter of washing the dirt off the valuable metal. However, since a commercially profitable placer deposit may require washing as much as a hundred cubic yards of earth for each ounce of metal, the problems are largely those of earth-moving. Goodnews Bay Mining Co., the only large-scale U. S. platinum metals producer, using hydraulic giants, bulldozers, dragline excavators, and a bucket line dredge, has excavated considerable yardage of muck, gravel, and bedrock from the tundra at Goodnews Bay.

As early as 1900, a few prospectors had penetrated the remote Goodnews district on the Bering coast of Alaska, and had recovered small quantities of gold by hand mining methods. By 1927, platinum had been discovered by gold miners on Fox Gulch, a tributary of Salmon River, south of Goodnews Bay, and between 1927 and 1934, some 3,000 Troy ounces of platinum metals had been marketed from the hand mining operations of the Salmon River valley. Increased interest in the new district brought Andrew Olson, then operating Olson & Co. and Northland Development Company at Flat, Alaska, to Goodnews Bay. After obtaining working agreements on a group of Squirrel Creek and Salmon River claims, Northland Development Company established a small camp on Squirrel Creek in 1934.

Elevated Sluice

In that year, a Bucyrus-Erie 1½ cu. yd. dragline excavator was shipped to Goodnews Bay, and began operations with an elevated trestle sluice. The Olson brothers had pioneered the use of elevated sluices in dragline mine operations in Alaska. Although the simplicity of the bedrock-sluice system is attractive, there are many deposits where sufficient grade is not available for disposal of tailings below a bedrock sluice. Placing the sluice box on a wooden or steel trestle provides sufficient grade in many cases to permit gravity spreading of the tailings without mechanical stacking. The trestle sluice is equipped with a dump box or hopper at the upper end, with a set of grizzly bars to remove the larger rocks and boulders. Material dumped by the dragline into the hopper is washed down the sluice by a hand-operated three-inch nozzle mounted at the mouth of the hopper. The Goodnews trestle carries a 100 foot sluice box, with 80 feet of 36-inch manganese steel riffles followed by a 20-ft. section of undercurrent plates for saving fines.

A prospect drilling program was undertaken and during the following two seasons, sufficient ground was proved to outline a dredgeable area suitable for the installation of an eight-cu. ft. bucket dredge. Efficient placer operation indicates the use of prospect drilling to outline as acurately as possible the areas in which the deposit may be profitably mined. The Goodnews Bay procedure is to cross the stream bed at 500-ft. intervals with lines of drill holes spaced 100 feet apart. The limits shown by this grid of test holes are then more closely defined by additional drilling. Goodnews uses Bucyrus-Erie 26-P prospecting drills, driving six-inch casing. After each foot of drive, the material in the casing is churned with a 5⅝-inch, 150-pound placer bit, and pumped out with a sand pump. The sample thus recovered is concentrated in a rocker and panned. Drill logs show depth of muck, sand, clay, or gravel, depth to bedrock, and the values recovered throughout the section, including the depth to which the

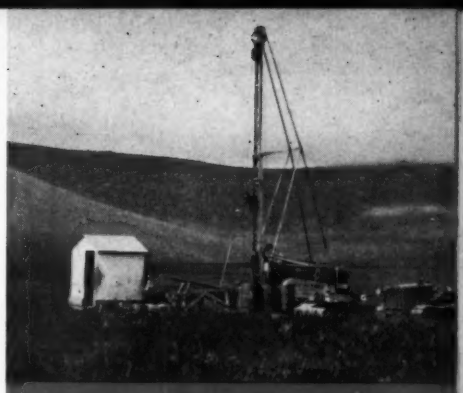
mineral penetrates the bedrock. The drills operate on a single shift daily, with a driller, helper, and panner, and average about 30 feet per shift.

With RFC assistance, a Yuba pontoon-hull diesel electric mining dredge was ordered, shipped to Goodnews Bay, and erected in 1937. To facilitate handling of the dredge components, a Bucyrus-Erie 1¼-cu. yd. dragline was put into service as a mobile crane. Since 1938, the first dredge production season, the mining company has steadily produced about 10% of the annual world supply of platinum, and about one-third of the world iridium production.

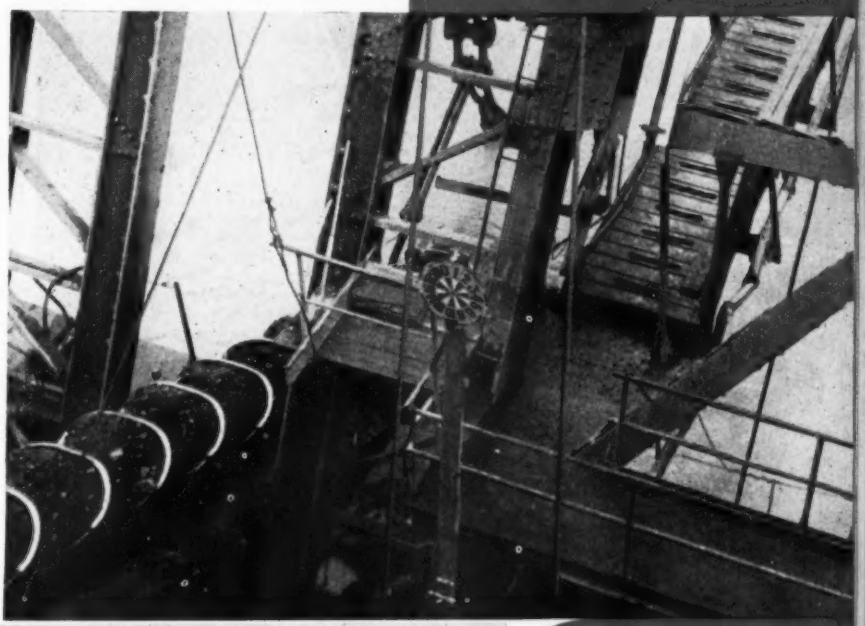
Dredge is Prime Mover

In the Goodnews mining operations, the dredge is the prime mover, producing generally the more substantial part of the mine output, and supplying electric power for the mine camp and shops. Built by Yuba Manufacturing Co. in 1937, the dredge is supported by a steel hull, 60′ x 130′ x 9′ deep, made up of 33 pontoons. The digging ladder carries a bucket line of 94 buckets of eight-cu. ft. capacity, running under average conditions, at a speed of about 28 buckets per minute. Material dumped by the buckets into the main hopper feeds through a 7½-ft. diameter revolving trommel screen, 36½ feet long, the oversize discharging onto a 36-inch American Rubber Mfg. Co. stacker belt, which is 140 feet between centers. A system of sluices and Pan-American placer jigs processes the undersize from the screen, concentrating the platinum grain and black sand, which is removed at weekly cleanup periods for further cleaning for shipment.

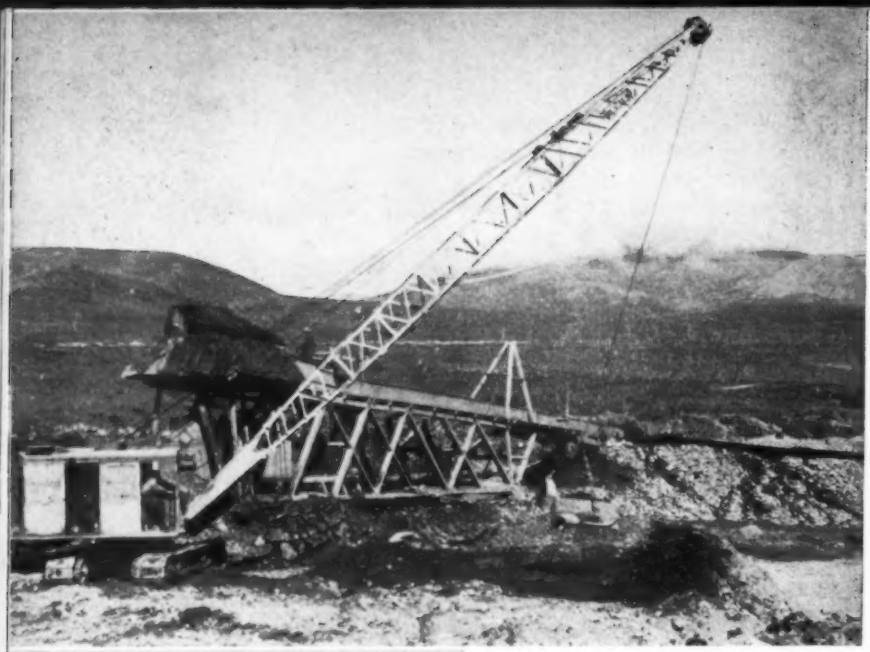
The primary source of power is an American Locomotive Co. 12½ x 13, eight-cylinder diesel, rated at 720 hp at 600 rpm, direct-connected to a Westinghouse 625 kva generator. Alternating current at 440 volts energizes the various electric motors driving bucket

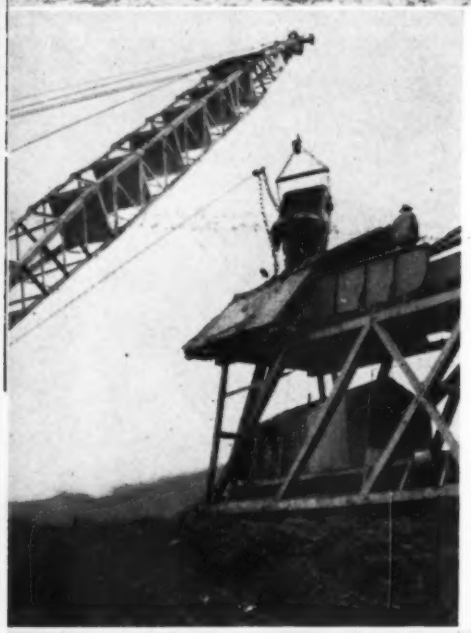


• One of the Bucyrus-Erie prospecting churn drills proves the ground at Goodnews Bay. Red Mountain in the background is believed to be the source of the mineral concentrated in the stream beds of the district.



• Above: Dredge bucket line, lower left. Dial indicator, center, is used by panner to signal winchman what values are being recovered, according to panner's samples taken regularly from buckets. Left: Bow view of Goodnews Bay Mining Co. Yuba dredge, a 1400-ton unit which handles an average season's output of over a million cu. yds. of material.





• Above: Gravel is loaded into hopper at head of elevated sluice by Bucyrus-Erie dragline with 1¼-cu. yd. bucket. Elevation of sluice facilitates disposal of tailings. Left: A yard and a quarter of platinum bearing gravel dumping into head of sluice. Nozzleman on trestle washes the material down over the riffles behind him. Below: With sluice box set in bedrock, dragline stacks tailings while paydirt is fed to sluice by hydraulic nozzle and a bulldozer.

line, screen, stacker, winches, and pumps.

The dredge, a 1400-ton unit, representing over a half-million dollar investment, is most efficiently utilized in continuous operation during the mining season, and is therefore operated on three eight-hour shifts daily. The crew consists of winch man, two oilers, a diesel engineer, and a panner. In addition, a shore man on one shift daily installs dead-men for anchoring shore cables, and handles moving of the shore lines at intervals. Electrical maintenance is handled by the electrician who is in charge of all electrical plants at the mine.

Season's Output

In the 1946 season, the dredge operated from May 1 to November 14, handling 1,068,549 cu. yds. of material, an average season's output. Total operating time is generally held between 90 and 95% of total elapsed time, since all equipment is thoroughly overhauled during the spring repair period, and lost time is limited almost exclusively to cleanup periods. Lost time due to lubricating has been practically eliminated in the case of bucket line lower tumbler and rollers by the installation of a Trabon centralized lubrication system on the digging ladder.

Inasmuch as parts of the mineral deposit are not suitable for dredging, because of shallow ground, such mines are mined by other methods. During the 1946 season, a combination of dragline, bulldozer and hydraulic methods was used. Preliminary stripping to a depth of about five feet, was handled by one of the Bucyrus-Erie 1¼-cu. yd. draglines.

Tractor equipment on the job includes two Caterpillar D-8's, two D-6's, two 22's, and an Allis-Chalmers HD-14. The truck fleet, required for personnel transportation and for freighting from the lighterage site to the mine, consists of eight ½-ton pickups, a 1½-ton truck with removable 1250-gallon oil tank, and a 2½-ton 6x6 truck. With few exceptions, Standard Oil products are used throughout the plant.

Caterpillar tractors with Isaacson hydraulic bulldozers were used to move the mineral-bearing ma-

• Right: Squirrel Creek camp has grown in the last ten years to a village with over 50 buildings. Below: Mine supplies being brought into boat harbor at Platinum aboard self-propelled barge. The mining company handles its own lighterage from ship to shore with this type of equipment.

terial within reach of a three-inch hydraulic monitor, which washed the material into the throat of a sluice-box set in the bedrock with sufficient grade to carry the material over the riffles of the sluice. The discharge end of the bedrock sluice was drained by a channel cut into the rock, leading out to the stream level below. Sluice tailings were removed and stacked by the dragline. Bulldozing, hydraulicking, and stacking were continuous operations, not requiring stockpiling at any point in the process. This operation was carried on in 1946 from June 19 to October 12, moving 188,943 cu. yds. of material, with an average depth of 18 feet. One of the draglines was equipped with a 55-ft. boom, and the other with a 60-ft. duralumin boom.

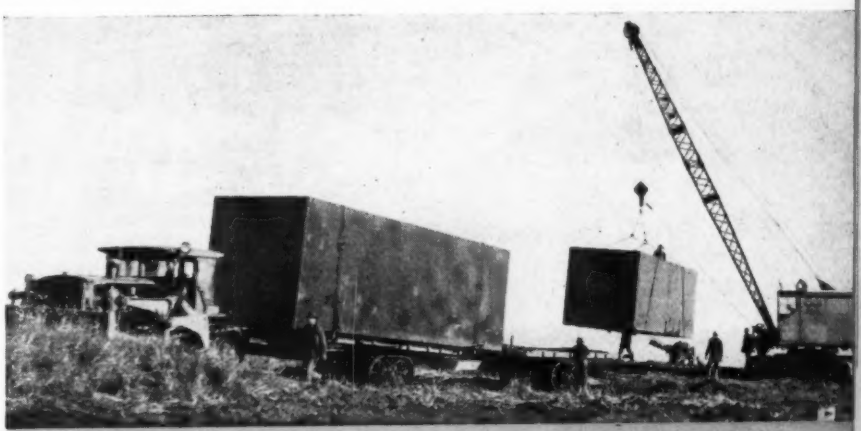
Work Three Shifts

Machine operators, nozzlemen, and oilers were employed on three eight-hour shifts daily, two shifts sluicing and the third being occupied in servicing, moving, and auxiliary jobs. Combined dredge and dragline operations yield from 20,000 to 30,000 Troy ounces of crude platinum metals annually.

The Goodnews Bay mining season is generally preceded by a period of extensive overhaul and repair, the first of the shop and maintenance crews going into Goodnews in late March. Servicing of all units is thorough, it being considered important to forestall mechanical shut-downs during the mining season. Starting up by the end of April, the dredge operation continues into November, while the dragline mining season is generally mid-May to October.

There being no commercial service facilities in the district, the mining company maintains rather elaborate shop and repair equipment. The machine shop is equipped with a Monarch 18-inch lathe with a 12½-ft. bed; a gap-bed lathe with a 28-inch maximum swing; a shaper, drill-presses, and power hack-saw, in addition to

(Continued on page 227)



• Above: An 11-ton dredge hull pontoon is loaded on a trailer by the 34-B at Goodnews Bay. Tractors hauled 1400 tons of dredge components ten miles along the Bering Sea beach and over five miles inland. Below: Two draglines utilized as mobile cranes facilitated the Goodnews Bay dredge erection job.

By JAMES M. O'NEIL

Mr. O'Neil, maintenance superintendent for 20 years for F & S Trucking & Contracting Co., Butte, Montana, finds steam cleaning of excavating and hauling equipment, prior to major overhaul, cuts maintenance costs as much as 40%.

STEAM Cleaning Pays Big Dividends

TWENTY-EIGHT SQUARE FEET of the 10,000 square foot floor space of our maintenance and repair shop houses one of the most important pieces of equipment we own—our steam cleaning unit. Our shop is modernly equipped, has 17-foot clearance throughout, electrically operated doors.

In 1940 we put in our first steam cleaning unit and began giving every piece of equipment coming in for a major overhaul a complete steam cleaning. In November, 1945, the first steam cleaner was replaced with a new 60 gallon per hour unit. This new unit cost $1165 installed, has an electrically operated pump, a 10 gallon solution tank, and a diesel fuel oil heating unit. For general cleaning of heavy equipment, we use three pounds of commercial cleaning soap to a 20 gallon container of water. Water is directly connected to the unit under standard city pressure, thus being continuously converted into steam.

The cleaning unit is located in a room four by seven feet square joining the wash rack. The steam hose is long enough so that it will reach a drainway joining the rack and cover any part of a large shovel parked there.

For the average Bucyrus-Erie 1½ cu. yd. shovel-dragline combination, we figure the total cost for a 100 per cent steam cleaning job will run $25. It requires 16 hours time for one man, which runs approximately $20. Soap (5½ pounds) and fuel oil (10 gallons), run $5. For cleaning one of our GMC, eight-yard semi-trailer dump trucks, the time and cost runs approximately the same.

Since there was a period when the steam cleaning unit was not in operation, we have a cost comparison for major truck overhaul jobs — where trucks were given complete steam cleaning, and where they were overhauled without first being steam cleaned.

The following are labor and material charges against three eight yard semi-trailer dump trucks for a 12-month period. These trucks were each given one major overhaul during the year without pre-cleaning by steam.

Truck	Labor Cost	Material Cost
No. 1	$1427.17	$1661.02
No. 2	1328.85	1959.38
No. 3	1213.80	1954.81
Total—3	$3969.82	$5575.21
Average	$1323.27	$1858.40

The following are labor and material charges on three eight yard semi-trailer dump trucks for the 12 months' period preceding the above. These trucks were all given one major overhaul job during the year, and in each case the truck was given 100 per cent steam cleaning before the overhaul.

Truck	Labor Cost	Material Cost
No. 1	$1085.49	$1117.21
No. 2	1200.80	1243.41
No. 3	380.57	794.38
Total—3	$2666.86	$3155.00
Average	$888.95	$1051.66

We do not contend that all of this saving is due to steam cleaning. In the first place the trucks listed in the first table were one year older than those in the second table. The first schedule covers 1945 and that was our highest maintenance cost year, even above 1946.

However, we do think that it is conservative to state that a large part of the higher cost was due to the lack of steam cleaning.

No comparative costs are available for general overhaul jobs on shovels with and without presteam cleaning. In these jobs the parts replacements are the big factor and they vary so greatly on different jobs that comparison figures would not give an accurate picture.

The point is this — we know that steam cleaning on a shovel or similar piece of heavy equipment does not run over $25 average. We know that complete steam cleaning greatly reduces overhaul time and more—it enables us to do a far better job.

Dip Tank Also Used

When a piece of equipment is torn down after steam cleaning, we use a cold solution dip tank for cleaning motors, transmissions, rear end parts, gears, etc.

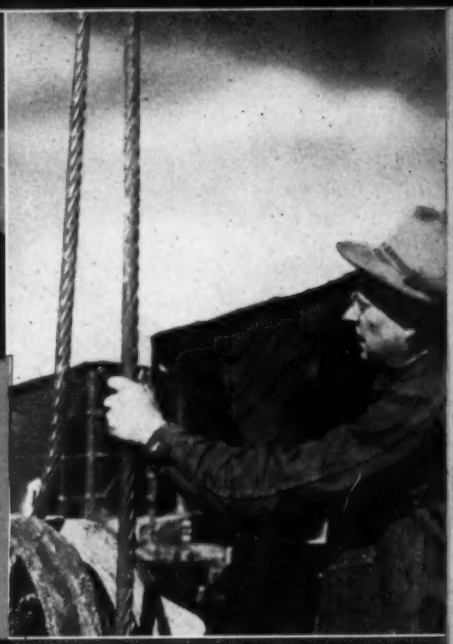
The tank which we are using at present was made in our own metal shop and is installed in one corner of the wash rack room. An overhead crane has been installed above the tank for handling the parts which go into the solution.

A commercial cold solution cleaner is used. This costs us $20.35 for 110 gallons which will last one year. Parts are allowed to remain in the solution 24 hours on an average, and then drained above the tank from one to two hours.

After the cold solution has been allowed to drain back into the tank, the parts are lowered to the wash room floor and again cleaned, this time with a hot pressure hose. After this cleaning the parts are dried with the air hose.

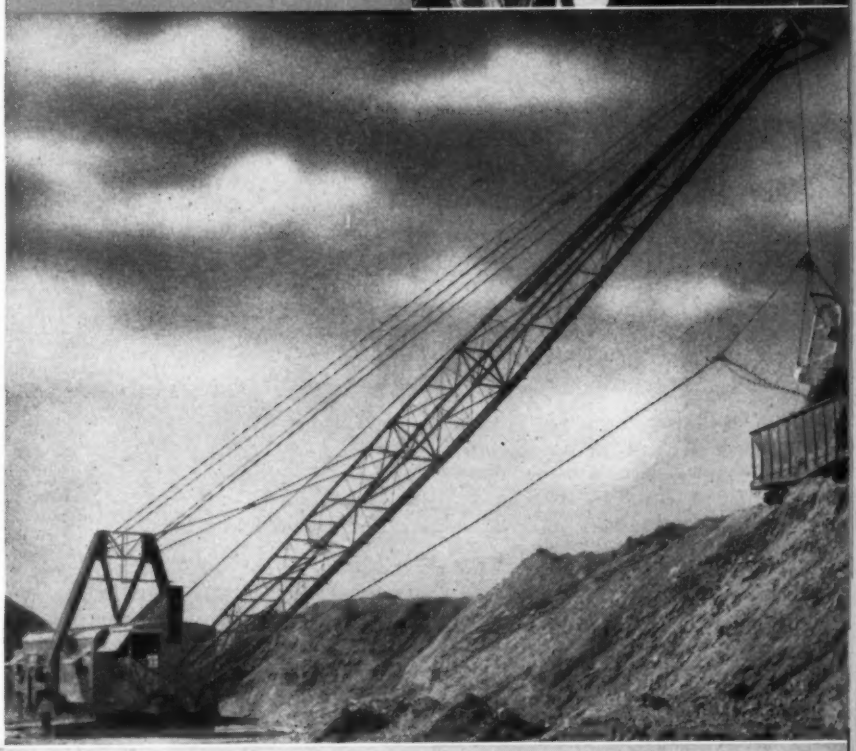
We have found this same meth-

(Continued on page 230)



• **Above:** Operator pours soap solution into steam cleaning unit.
• **Right:** The author examines preformed wire rope on a two-yard Bucyrus-Erie shovel.

• **Below:** F & S performs open pit mining for Anaconda Copper Company. Here, a five-yard Bucyrus-Monighan walking dragline loads copper ore to railroad cars.

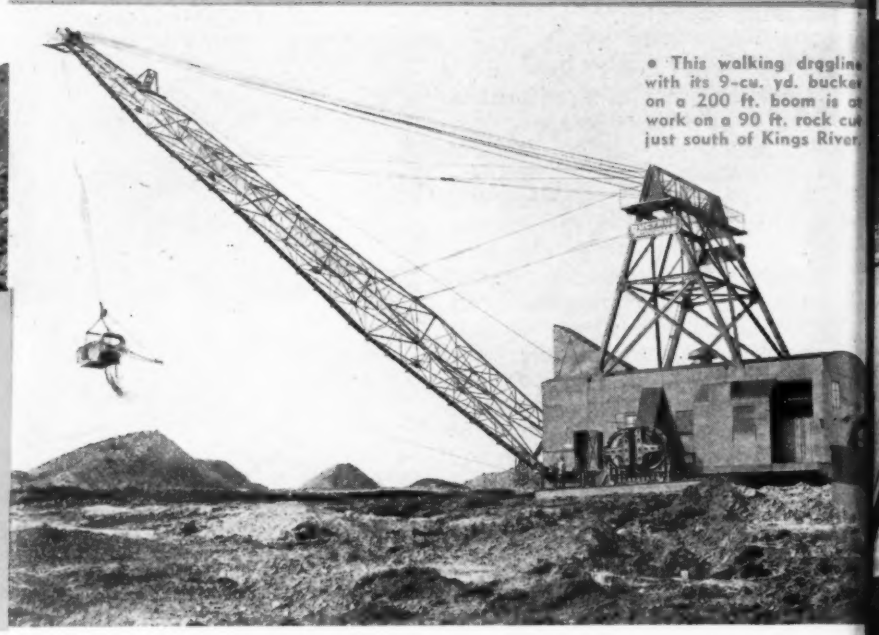


• **A section of the predominantly GMC truck fleet at F & S's Butte yard. Every piece of equipment is given a complete steam cleaning before a major overhaul.**

Digging an Irrigation Canal

By ROBERT J. GREEN

• Pay dirt! The 9-cu. yd. bucket of the Bucyrus-Monighan walking dragline dumps tons of earth and rock on a spoil pile.



• This walking dragline with its 9-cu. yd. bucket on a 200 ft. boom is at work on a 90 ft. rock cut just south of Kings River.

Morrison-Knudsen Co. and M. H. Hasler use Bucyrus-Monighan walking dragline with 9 cu. yd. bucket on 200-ft. boom as key machine in construction of section of Friant-Kern Irrigation Canal in California.

FROM KINGS RIVER 14 miles south toward Bakersfield, the eventual destination of irrigation water from Friant Reservoir, Morrison-Knudsen Company, Inc. and M. H. Hasler, a joint venture, is building a link of the Friant-Kern Irrigation Canal. Through a variety of materials ranging from disintegrated granite to clay, men and machines are pushing a path for the artificial stream.

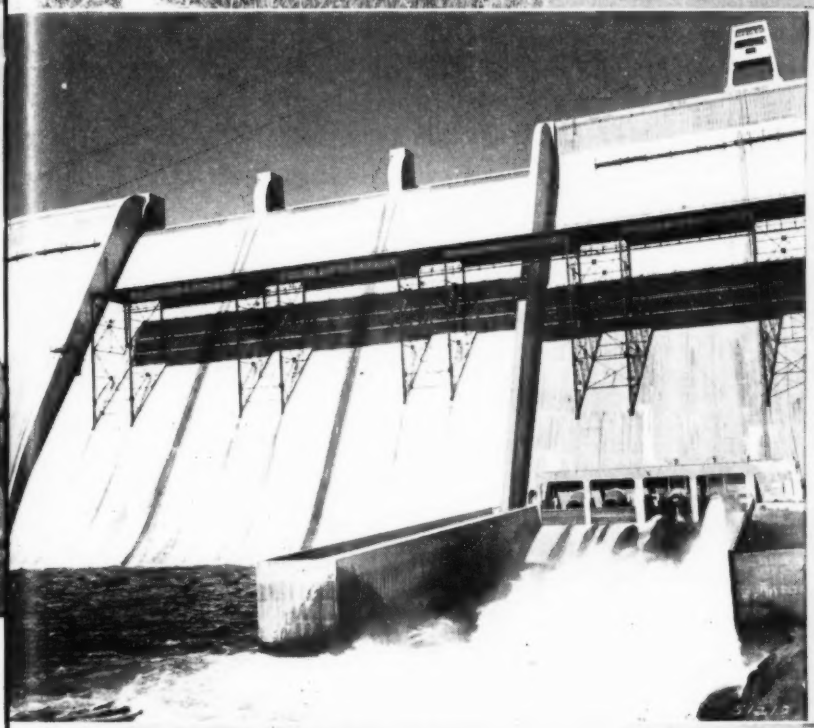
The Morrison-Knudsen Company, Inc. and M. H. Hasler project will consist of some 69,825 lineal feet of open canal with a carrying capacity of 4,000 cfs, and 3048 lineal feet of inverted siphon. The 24′ 3″ diameter siphon barrel will carry the irrigation stream under the normal Kings River stream bed. Because of periodic flood stages in late winter and spring, it is expected that this work will be pushed through as fast as possible late in the summer of 1947 when the stream is low.

The Friant-Kern Canal within the limits of the Morrison-Knudsen and M. H. Hasler project will have a bottom width of 64 feet from toe to toe and is unlined. In the heaviest cut on the job, which is 90 feet in depth, side slopes vary from 1¼:1 to ½:1, with a four-foot berm at the top of the ditch. Farther up the slope a 16-foot berm is being cut to reduce the possibility of earth and rock slides.

Considered from its broad aspects, the Friant-Kern Canal is a part of the comprehensive development of the Central Valley of California. Friant Dam, Shasta Dam, Keswick Dam, the Madera and Contra Costa Canals are also a part of this big water distribution system. Some day within the next ten years water from the Friant Reservoir will travel through the Friant-Kern Canal now under construction, and reach thousands of acres of land north and west of Bakersfield.

The major quantities in the Morrison-Knudsen and M. H. Hasler contract consist of 3,500,000 cu. yds. of excavation and 50,000 cu. yds. of high class concrete. Approximately 21,600 cu. yds. of concrete will be poured in the siphon barrel, but this work is not yet under way. At the present time all field erection work has been finished on a new Bucyrus-Monighan 9-W walking dragline,

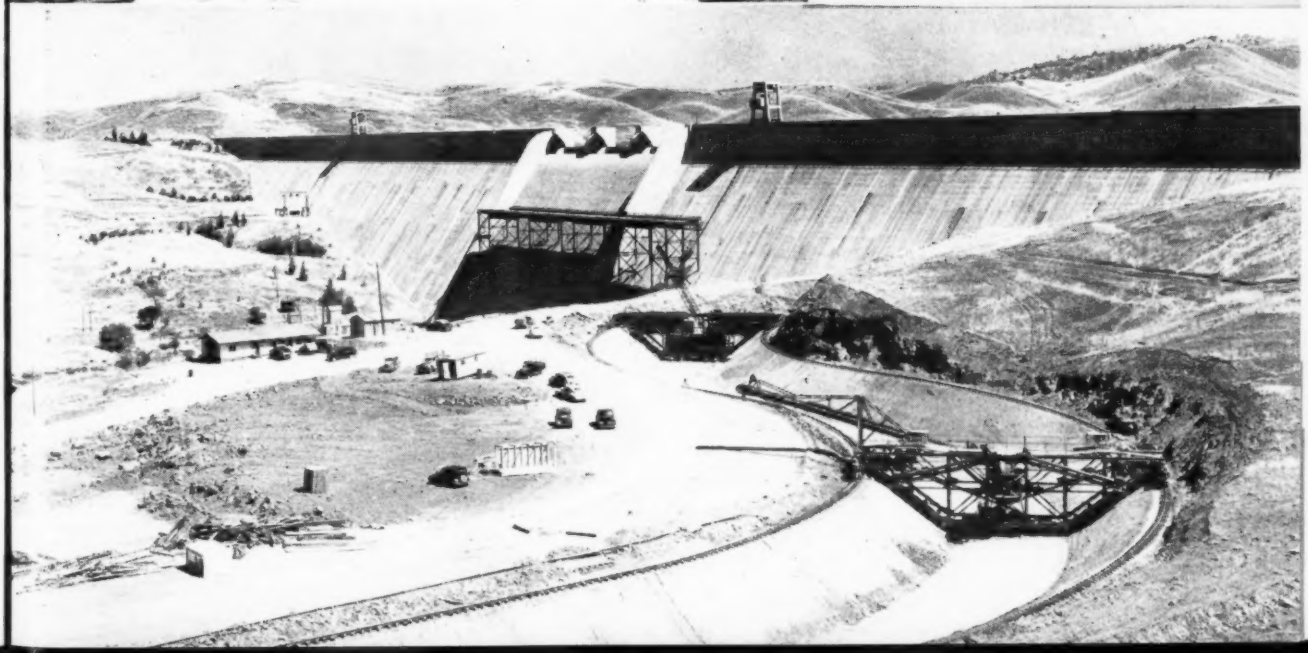
(Continued on page 224)



• When Friant-Kern Canal is finished semi-arid wasteland will be changed to the fertile, luxuriant land shown here on a section of the Madera Canal.

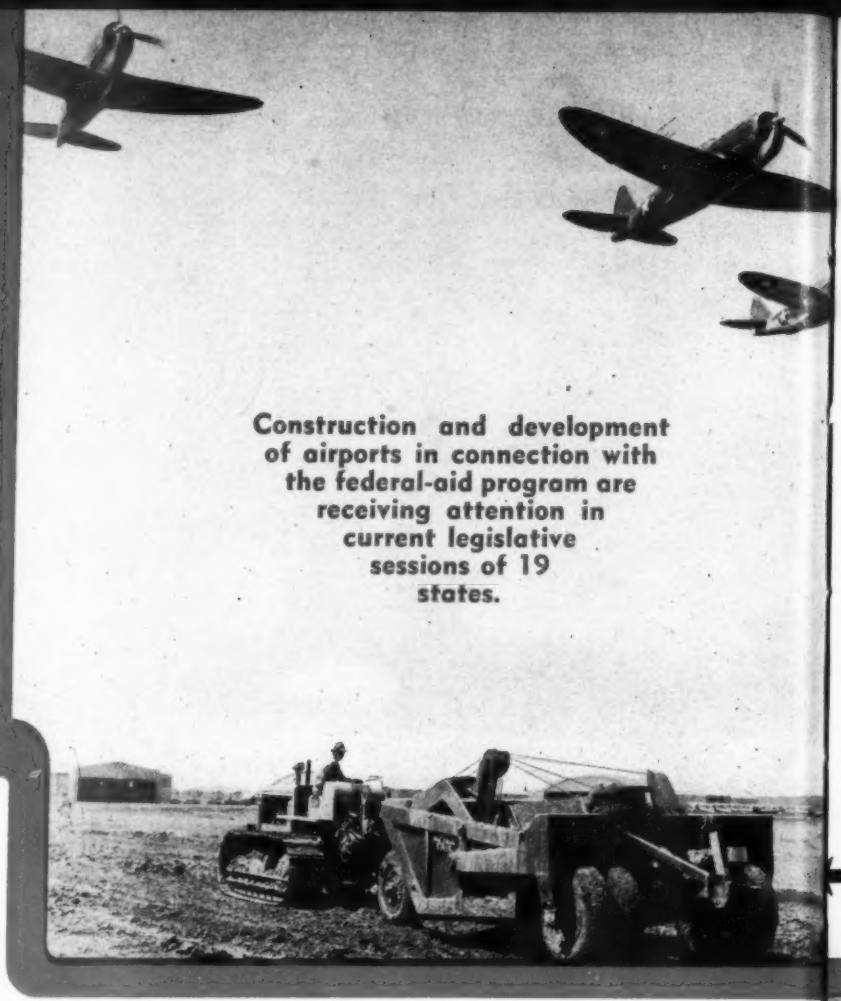
• Friant Dam, near Friant, California, is a part of the Central Valley Irrigation project.

• View of Friant-Kern Canal at Friant Dam, takeoff point for the canal system. The canal cutting machines shown here are at work on another contract.



State Progress in Federal-Aid Airport Program

by BETHUNE JONES



Construction and development of airports in connection with the federal-aid program are receiving attention in current legislative sessions of 19 states.

BILLS are being considered in 19 states in preparation for participation in the federal-aid airport program provided under the 1946 Congressional "Federal Airport Act" to authorize $500,000,000 federal aid over a seven-year period, not to exceed $100,000,000 in any one year.

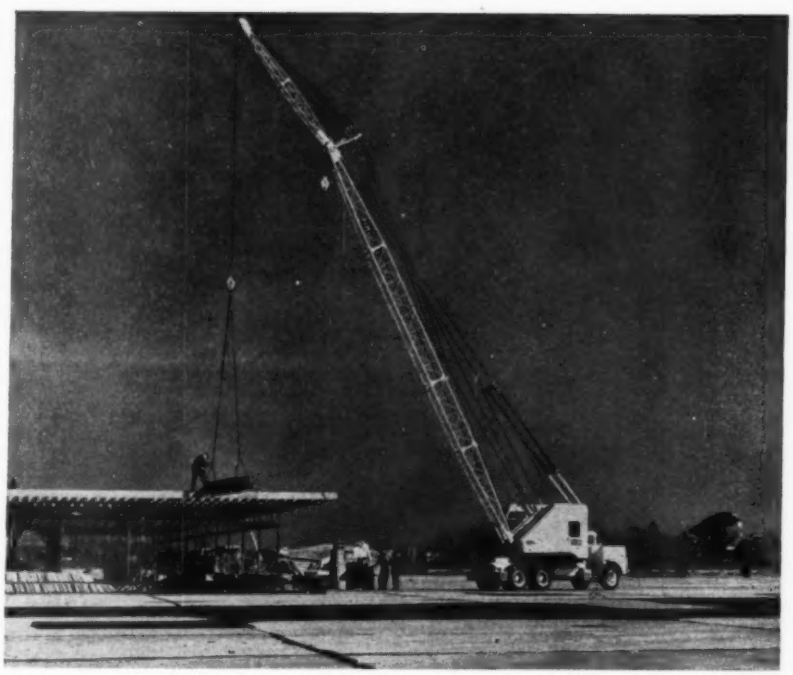
Under the terms of this act, up to 50 per cent of the allowable cost of an approved airport construction and development program will be paid by the federal government, the balance to be paid by state or local funds.

State assistance in providing local matching funds for airport construction is being considered in a number of instances. Legislation requiring that the federal aid be channeled through state agencies, rather than direct to municipalities, also has been proposed in many states in line with recommendations of the Council of State Governments.

Arizona

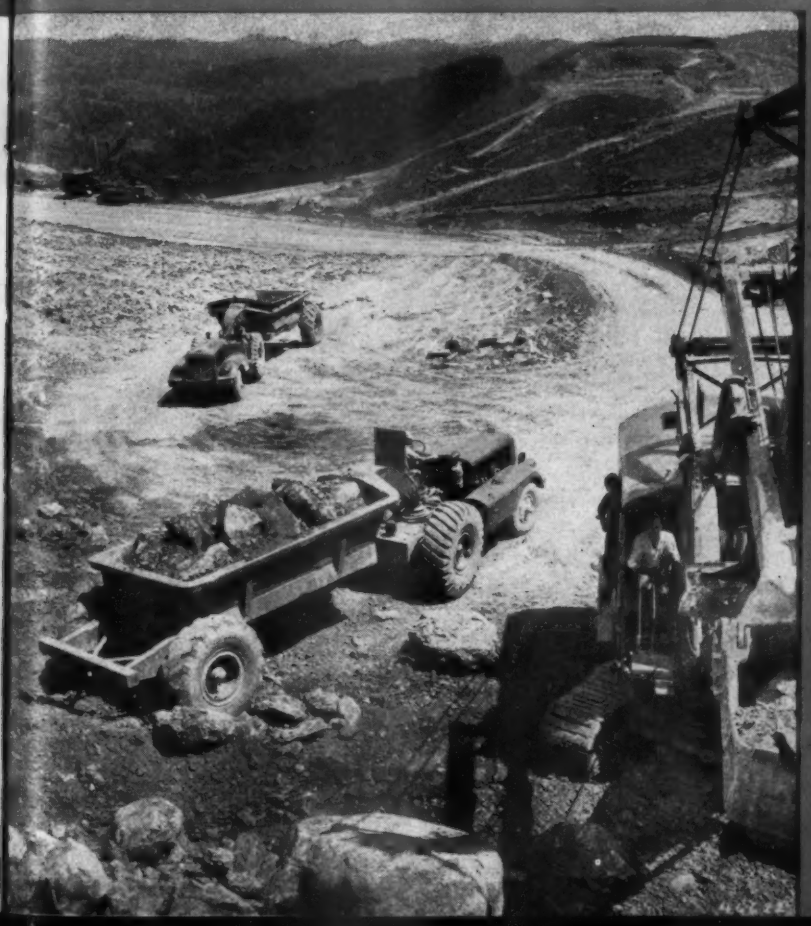
Governor Osborn asked the Arizona legislature to enact "fair and suitable" legislation to effect an aviation tax and other controls over the industry. Enactment of an "equitable" ad valorem tax on all aircraft operating in and through the state, to raise reve-

• Handling steel erection work for the new Chicago Municipal Airport terminal building is this P&H 255-A truck crane with 60-ft. boom and 20-ft. jib. Owner is Overland Construction Company, Chicago.



• Left: Bucyrus-Erie 10-yd. scraper pulled by International Harvester TD-18 tractor levels ground for an airport runway at Muskogee, Oklahoma.

• Enlarging Mills Field Airport on the west shore of San Francisco Bay are 6-yd. Bucyrus-Erie 120-B shovels loading to 33-yd. Southwest wagons pulled by 200-HP Peterbuilt diesel trucks.



• View of construction work at Kanawha Airport near Charleston, W. Va., shows Northwest shovel loading to Caterpillar wagons. In left background, a Lorain shovel trims bank.

nue to match federal airport funds, was earlier recommended by the Arizona Advisory Committee on Aviation after a majority of its members opposed a proposed tax on aviation gasoline. The committee also recommended creation of a State Aviation Commission to coordinate airport development.

Arkansas

The Arkansas legislature was urged by Governor Laney to provide for aviation development in that state on a "fair, sound and safe basis."

California

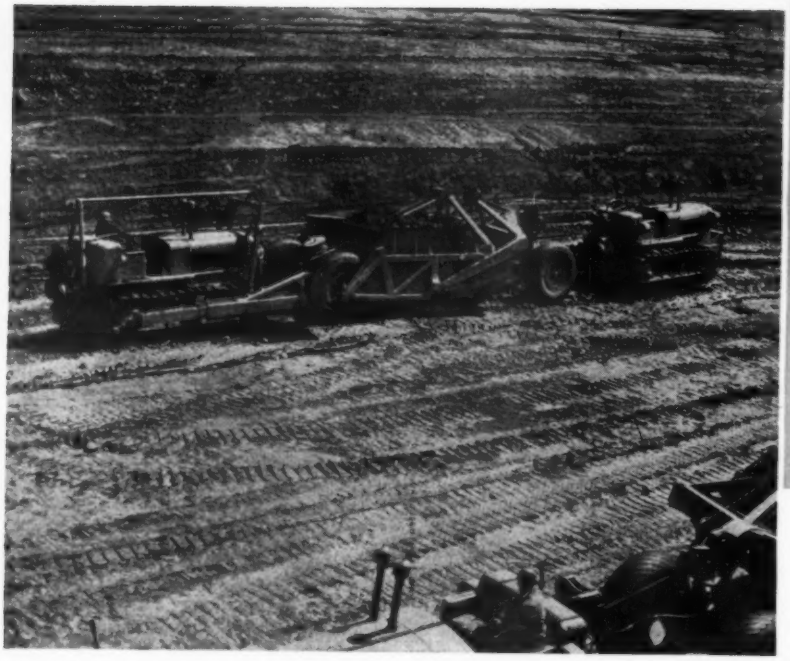
Creation of a California Aviation Commission to direct a master plan for construction of airports by cities and counties, and through which all federal-aid funds would be channeled, was proposed by a state legislative interim committee with the backing of Gov. Earl Warren. Comprising five commissioners and a $10,000-a-year director, the new agency would be given an appropriation of $195,000 for its first year's operation.

Colorado

Colorado's Gov. Lee Knous advocated a program which will enable the state, county and municipal governments to realize full benefits of the federal-aid airport program. Chairman Alan R. Phipps of the State Aeronautics Commission had earlier proposed legislative authorization of the issuance of $3,000,000 in bonds over a seven-year period to provide state assistance in airport construction, with federal aid to be channeled through the state agency. Phipps also disclosed that elimination of aviation gas tax refunds was being considered as one of several means of raising revenue for Colorado airports.

Indiana

In his message to the Indiana legislature, Gov. Ralph F. Gates urged the enactment of legislation to provide for financing the con-



• Above: Baker bulldozer-equipped Allis-Chalmers HD-14 tractor digs storm sewer trench at Springfield (Illinois) airport, a $3,000,000 project occupying 967 acres. Runways will be 5300 feet long and 150 feet wide. • Left: Gar Wood scrapers and Allis-Chalmers tractors level runways at Schrom Airport, Washington, D. C.

struction of municipal airports, correcting the omission of bonding authority in the state's 1945 aviation law.

Maine

In Maine, Gov. Horace A. Hildreth supported a proposal of the State Aeronautics Commission that municipalities provide the land and that the towns and the state match funds equally to meet federal-aid airport allocations. He cautioned, however, that the problem of maintenance as well as construction costs should be considered.

Minnesota

"The state must, with other levels of government, continue to help provide adequate ground facilities and navigational aids that are of a public nature and responsibility," Gov. Luther W. Youngdahl told the Minnesota legislature. "The development of these facilities has come to be recognized as a public project in which local, state and federal governments all have a strong degree of interest. To accomplish this objective, such appropriations should be made as are necessary to continue the program of the State Department of Aeronautics within a sound economy."

Montana

Gov. Sam C. Ford asked the Montana legislature to provide that federal-aid airport funds shall be spent in the state only upon approval of the State Aeronautics Commission. He asserted the state is "interested in an adequate system of public airports, intelligently planned, efficiently administered and economically financed."

Nevada

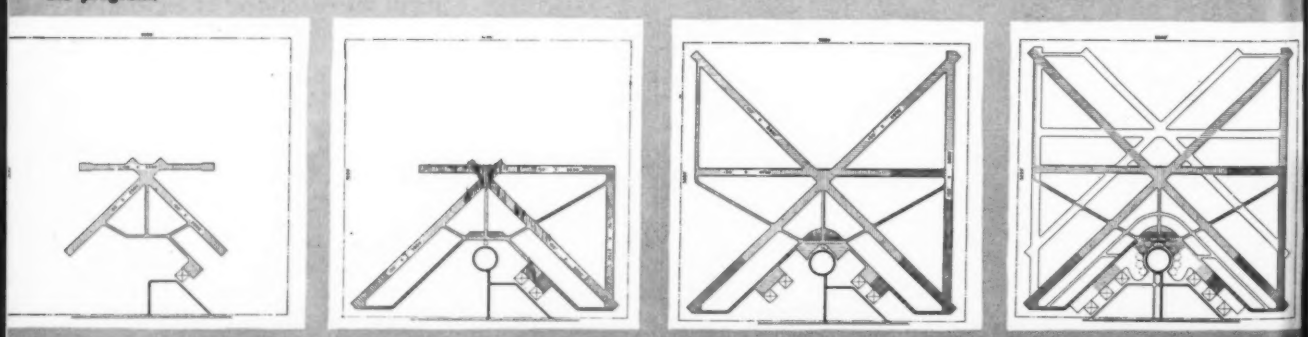
Nevada's legislature was urged by Gov. Vail M. Pittman to create an airport development board through which federal-aid funds would be channeled. "In addition to creating such a board," he told the lawmakers, "it will be necessary for you to provide funds for the support of the board and for the construction of landing fields and flight strips. It may be that you will want to explore the possibilities of placing a tax on aviation gasoline used in the state, with the proviso, of course, that any moneys collected will go exclusively to the support of a board and the construction of needed facilities."

New Hampshire

Asking the New Hampshire legislature to give aviation "broad encouragement," Gov. Charles M. Dale said: "Consideration should be given to a tax on gasoline used as aviation fuel with the allocation of such revenue to the aeronautics commission. Such a policy might make this regulatory department self-supporting." Elimination of aviation refunds of the state's 4-cent gasoline tax, with the revenue dedicated to airport and aviation uses, was subse-

(Continued on page 226)

• Four progressive stages in the development of a major air terminal as suggested by the Civil Aeronautics Administration for municipalities planning to take part in the federal-aid program.



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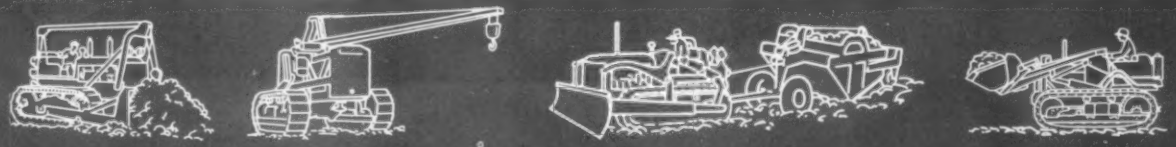


Shots from the FIRING LINE

See More Funds Available for Improving Nation's Highways

by BETHUNE JONES

Citing progress in the last two years toward eliminating highway fund diversion and other unsound practices in the administration of highway revenues, the American Petroleum Industries Committee points out that a continuation of this trend would make "far more funds available from existing tax sources for highway improvements and betterments than ever before."

"The recovery of the nation's highway economy from wartime dislocations has been remarkably rapid," the APIC declares in its *Tax Economics Bulletin*. "Gasoline tax receipts and collections from motor vehicle fees, which provide the bulk of the funds used by the various states in meeting their highway financial needs, have in many cases already exceeded prewar levels."

Tax Receipts Gain

Observing that the swing back to peacetime highway revenue levels was well under way in 1945, the committee notes that according to the Public Roads Administration, the combined net total (after certain adjustments) of funds derived by the states from all types of highway user imposts amounted to $1,235,780,000 in 1945, representing a gain of approximately $100,000,000, or about 9 per cent over the 1944 level. The net amount of motor fuel tax receipts totaled $773,817,000, a gain of 13 per cent.

"Equally important from a highway development standpoint," the APIC asserts, "is the fact that highway revenues, in most cases, were better administered than in the past."

Comparison between the 1945 and 1944 disposition of net highway user tax receipts for the nation as a whole, as shown by Public Roads Administration figures, "reveals some encouraging trends," according to the APIC, which explains:

"In the first place, it will be noted that almost half of the available funds in 1945 were allocated for state highway construction and maintenance, compared with less than 43 per cent in 1944. The actual dollar amount applied to work on state highways increased by more than $125,000,000.

"A second favorable trend, and one which contributed importantly to the increased amount available for state highway construction, was the progress made in cutting down the diversion of automotive tax receipts to non-road purposes. Diversion was eliminated entirely in Kentucky which adopted an amendment to the state constitution prohibiting the practice. New York reported no diversion of highway funds in 1945, according to the Public Roads Administration. Pennsylvania, where an anti-diversion amendment was adopted in November, 1945, showed a sharp reduction, as did Wisconsin, which segregated its highway tax receipts from general fund revenues in 1945."

Also citing reduced debt service requirements as instrumental in releasing more money for state highway construction in 1945, the committee says:

"The percentage of total highway user tax funds applied to debt service dropped to 10.7 per cent from 13.6 per cent in 1944. Principal and interest payments on road bonds, however, continued to be a serious drain on highway funds in South Carolina and West Virginia, where more than half of all automotive tax receipts in 1945 were allocated for that purpose.

"In contrast to the reduction in debt service and diversion, the states as a whole turned over slightly larger shares of their highway revenues to local units of government than in 1944. Exclusive of the amount allocated to meet service charges on local road bonds, the state in 1945 set aside almost $312,000,000, or 25.2 per cent of total automotive taxes for local roads and streets.

"As a result of labor and material shortages, only part of the automotive tax revenues allocated to highway construction during 1945 actually could be spent. Consequently, the balances in nearly all state highway funds showed further marked gains. Highway revenues have continued to climb sharply in 1946 and in a number of states are running above prewar levels. Added to this is the fact that federal assistance for new highway construction has been

• Topping material for a six-mile graveled detour road being built by H. E. Williams Co. of Waco as part of a $340,000 contract for widening and paving Texas State Highway No. 6 near Waco is hauled by this 10-cu. yd. Mississippi Wagon, one of ten used on this job. Each of the wagons maintained an average speed of better than 20 m.p.h. on a haul from a clay-gravel pit 8½ miles away, despite appreciable grades on the long lead-in road.

Walking Draglines Change Their Name

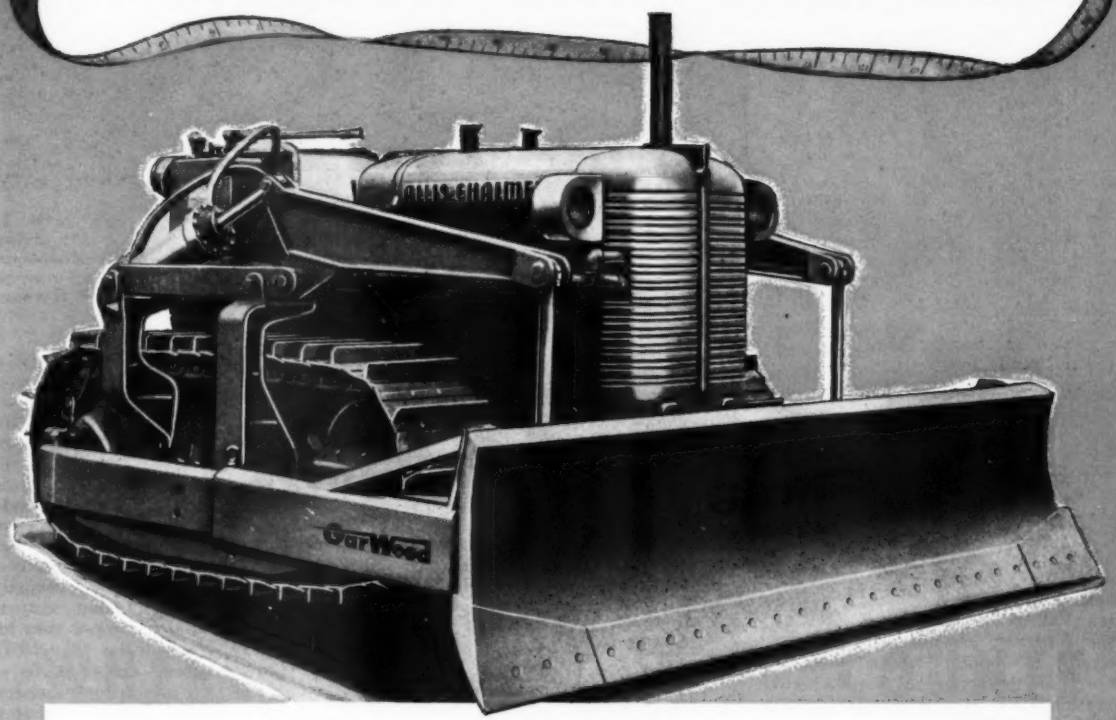
Bucyrus-Monighan company, a wholly-owned subsidiary of Bucyrus-Erie Company, has been dissolved and its operations merged with those of the parent Company. The Bucyrus-Monighan plant at Chicago will henceforth be operated as one of four Bucyrus-Erie plants, the other three being located at South Milwaukee, Wisconsin, Erie, Pennsylvania, and Evansville, Indiana. The general office of the Company is also at South Milwaukee.

A controlling interest in the Monighan Manufacturing Company of Chicago was purchased by Bucyrus-Erie Company in 1933 and the name of the company changed to Bucyrus-Monighan Company, which later on became a wholly-owned subsidiary. Sales of Bucyrus-Monighan products have been handled by Bucyrus-Erie since 1933.

The management of the Chicago plant continues the same as before, and operations there will be carried on under the name—Bucyrus-Erie Company, Monighan Division. The Chicago plant is located at 931 North Kilpatrick Avenue.

• L. H. Crocker of Emporia, Va., uses his Bucyrus-Erie Dozer-Shovel mounted on an International TD-9 tractor to grade a five-acre plot for a standard baseball field for the local Lions Club. First the dirt was dozed to the sides and then shoveled into trucks as shown here. Some 5,000 cu. yds. of heavy clay was moved in this way.

Measure the Difference



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authorized for the next few years on a scale never before approached. If the progress made during 1945 and 1946 toward eliminating diversion and other unsound practices is continued in the postwar period, there will be far more funds available from existing tax sources for highway improvements and betterments than ever before."

AGC Cites Needed Labor Laws in Convention

The Associated General Contractors of America at its recent 28th annual convention urged that its membership work to the fullest extent of its capacity to construct the housing and other facilities vitally needed "and demonstrate to the public that it can have confidence in the ability of the association to fulfill the construction needs of the nation."

More than 600 members attended the four-day Chicago meeting, which resulted in the passage of a series of resolutions affecting broad phases of the construction industry.

These included a recommendation urging building trade unions to end jurisdictional disputes among unions which cause work stoppages and restrictive practices as a step toward greater efficiency and economy in construction work; the removal of all government controls over building to stimulate rental housing; a ten-point program to guide labor legislation; a plea for training of a greater number of construction trades apprentices; opposition to the establishment of power authorities patterned after the Tennessee Valley Authority, and the use of the contract, low-bid form of construction in public works projects rather than departmental employment of day labor; and appropriation of federal funds to public works on a continuing basis to permit orderly development and most efficient and economical construction of highways, flood control, rivers and harbor, soil conservation and rural electrification.

Among the association's suggestions for new labor laws were proposals that one year be set as the limit in which claims would be allowed for alleged back pay and that the settlement of back pay claims be "legal and binding on both parties if arrived at by mutual agreement"; that secondary boycotts and sympathy strikes be outlawed; and that both labor and employers be protected from exploitation by unions or employers.

New Officers

Forrest W. Parrott, Sioux City, Iowa, was elected president of the A. G. C. for 1947 at the convention's closing session, and D. W. Winkelman, Syracuse, N. Y., was elected vice-president.

The association's three divisions elected the following officers for 1947:

Building Contractors' Division — W. L. Couse, Detroit, Mich., chairman; A. L. Atherton, Seattle, Wash., vice chairman.

Heavy Construction and Railroad Contractors' Division—George H. Atkinson, San Francisco, Calif., chairman; S. L. Fuller, Pittsburgh, Pa., vice chairman.

Highway Contractors' Division—Gayle Armstrong, Roswell, N. Mex., chairman; G. H. Ball, Berkeley, Calif., vice chairman.

Elected to the Secretaries' and Managers' Council, which represents the 101 chapters and branches of the A.G.C., were Milo P. Flickinger, Springfield, Ill., chairman; Hugh J. Connelly, Trenton, N. J., vice chairman; Joseph P. Condrey, Phoenix, Ariz., secretary.

• Adam Eidemiller of Greenburg, Pa., uses Bucyrus-Erie 2½-cu. yd. shovel for loading coal from a Pennsylvania strip mine.

• Caterpillar D8 tractors with Caterpillar bulldozer and Le Tourneau scraper building an earth dam and reservoir on South Enginetas Creek in California. The dam, 45 ft. high, will contain approximately 50,000 cu. yds. of material. The reservoir will be lined with 22,000 cu. yds. of compacted earth and will have a concrete outlet tower and spillway. Macco Construction Co. of Clearwater, California, owns the equipment.

"3 Lane Roads are Death Traps," Fleming Tells ARBA

Three lane highways, once regarded as advanced highway engineering, have proved to be death traps for incautious drivers, Maj. Gen. Philip B. Fleming, administrator of the federal works agency and of the office of temporary controls, told delegates to the American Road Builders' Association's 44th annual convention in Chicago.

Gen. Fleming is general chairman of the President's highway safety conference. The third lane in the highway, he said, invites drivers to pass other vehicles when curves or hills obscure the view ahead, thus causing numerous head-on accidents. He urged that highway lanes be made wider than 10 feet; that railway grade crossings be supplanted with separations wherever feasible; that sidewalks and other protective devices for pedestrians be promoted; that roadways be maintained with adequate shoulders for safe, year-round travel, and that the states adopt uniform signals, markings, and safety warnings.

Subgrade Survey

The nation's highway engineers are in almost unanimous agreement that the life and performance of road surfacing is primarily dependent on adequate subgrade support and drainage, according to a 48-state survey reported at the convention by Tilton E. Shelburne, research director for the Virginia Department of Highways. The survey covered drainage and subgrade practices all over the U. S.

Emphasis being placed on soil study was illustrated by the fact that highway departments in all but three states now have central soils laboratories for soil evaluation, research and testing.

The report also disclosed a new trend in soil study methods, with eight states indicating that use is now being made of aerial photography in connection with the identification or location of soil areas.

J. T. Callaway, Goodyear Tire and Rubber Company, Chicago, was named president of the American Road Build-

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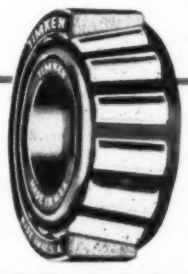
With two wheels providing all the support and furnishing the traction for this Bucyrus-Erie G-38 Scraper, the choice of wheel bearings easily might have made all the difference between dependability and undependability; between strength and weakness; between economical operation and uneconomical operation; between low maintenance cost and high maintenance cost.



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But the Bucyrus-Erie Company is bearing wise. They have used Timken Tapered Roller Bearings for many years; have proved that these bearings are masters of all loads — radial, thrust or both together in any combination; that they eliminate friction, defeat wear; and hold moving parts in correct and constant alignment.

This manufacturer's experience parallels that of thousands of others in all divisions of industry. Are you one of them? The Timken Roller Bearing Company, Canton 6, Ohio.

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TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ◐ AND THRUST →◐← LOADS OR ANY COMBINATION →✳←

ers' Association for 1947. He succeeds James J. Skelly of Media, Pa., who has headed the organization for the past two years.

For vice president of the Northeastern District, Paul B. Reinhold of Pittsburgh, Pa., succeeded himself. Charles W. Smith, Pensacola, Fla., replaced Alex F. Hancock of Mobile, Ala., as vice president of the Southern District, W. A. Roberts, Milwaukee, Wis., succeeded E. R. Galvin as vice president of the Central District. Robert A. Allen, Carson City, Nevada, was reelected vice president of the Western District.

Directors for a three year term expiring in 1950 include James C. Alban, Baltimore, Md.; Perry T. Ford, Columbus, Ohio; Frederick Hoitt, Boston, Mass.; E. R. Needles, New York, N. Y.; C. W. Phillips, Nashville, Tenn.; Walter Toebe, Lansing, Mich.; and Charles M. Upham, Washington, D. C., who is also engineer-director of the association. Messrs. Hoitt, Alban and Upham succeeded themselves as directors.

Herbert C. Whitehurst, director of highways for the District of Columbia, was returned as the Association's treasurer.

Lack of Funds Slows Work on Anderson Ranch Dam

Construction work on the Anderson Ranch Dam Project has been drastically curtailed on account of lack of funds, according to a recent announcement by R. J. Newell, Regional Director for the U. S. Bureau of Reclamation.

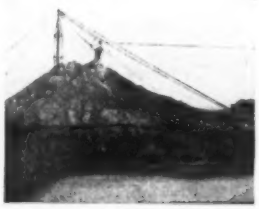
In a telegram to Morrison-Shea-Twaits-Winston the Chief Engineer at Denver, Colorado, Contracting Officer for the Bureau of Reclamation, notified the contractor that construction for the balance of fiscal year 1947 must be immediately curtailed to provide for only operation and maintenance of minimum essential facilities to the end of the current fiscal year.

The effects of this curtailment will be that the completion of the dam proper will be postponed at least one year and the full amount of water expected for use in the Boise Valley during the 1948 irrigation season will not be available at least until the spring of 1949.

The Bureau of Reclamation requested an appropriation for fiscal year 1947 of $2,847,000 to provide for continuing construction according to schedule, of which $1,234,475 was appropriated. Under present conditions, additional funds will be available for expenditure only after the Congress has passed the fiscal year 1948 appropriation bill, which contains a budget allowance of $4,136,000 for Anderson Ranch Dam construction.

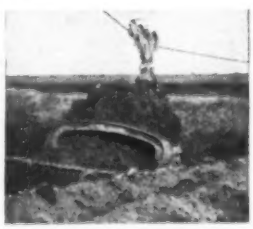
The Anderson Ranch Dam Project is a multiple-purpose project which will provide 493,000 acre-feet of storage for irrigation, flood control, and silt retention, and includes a 30,000-kva. power installation. The irrigation storage will provide a supplemental water supply for about 300,000 acres of land in the Boise Valley now subject to late season shortages.

SLASH COSTS
with Sauerman Machines



DEEP, WET EXCAVATION

Sauerman Slackline Cableway digs reservoir 400'x200' in area and places the spoil (80,000 cu. yd.) in a single pile.



HEAVY EARTH HANDLING

This large Crescent scraper with carrier is working on a coal stripping job. It is making a cut 300 ft. wide, 60 ft. deep and moving over 6,000 cu. yds. of overburden a day.

THREE main economies are assured by using Sauerman Scraper or Cableway Machines for long haul work such as moving gravel out of pits or ponds, stripping, stock-piling, bank excavation, dam and levee construction, etc. These economies are:

(1) Digging, hauling and automatic dumping are merged into a continuous, rapid operation controlled by one operator.

(2) Power requirement is moderate.

(3) Maintenance is simple.

Sauerman machines offer handling capacities from 10 to 1,000 tons per hour and operating spans from 200 to 1500 ft. Specifications of the various sizes and types of machines, together with illustrations of their uses are given in the Sauerman catalogs. Write for this literature today.

SAUERMAN BROS., INC.

574 S. Clinton St. Chicago 7, Ill.

Diversion Vote in Tennessee

As a result of approval by the Tennessee Legislature, a proposed state constitutional amendment to outlaw diversion of highway funds will be referred to the people at the November, 1948, election. If approved by the electorate, this will be the first change in Tennessee's constitution since 1870.

Announce Officials for June Highway Safety Conference

Governor Millard F. Caldwell, of Florida, has accepted the post of vice-chairman of the Action Program Group of the President's Highway Safety Conference which will meet in Washington, June 18, 19 and 20, according to Major General Philip B. Fleming, Federal Works Administrator, and general chairman of the conference.

Governor Caldwell, who is president of the United States Conference of Governors, will participate in the proceedings which will emphasize the important role played by state governments in the nation-wide movement to reduce deaths and accidents on the highways.

Reports from each state, giving account of progress made in highway safety activity, will be given prominent place on the agenda. The extent to which each state has adopted recommendations of the action program of the conference in regard to greater highway safety education, engineering and enforcement, will be a part of each state report.

Governors of the 48 States have been invited to attend the meeting.

A. W. Bohlen, head of the Washington staff of the American Association of Motor Vehicle Administrators, has been named executive director of the conference by General Fleming.

Propose Gas Tax Increases In 22 States and D.C.

Bills to increase state gasoline taxes have been introduced in the legislatures of 22 states and the District of Columbia. The proposed increases range from ½ cent in North Dakota to 10 cents in Washington. The 22 states considering such increases and the proposed increase per gallon are:

California	2 & 3	N. Hampshire	1c
Colorado	2c	Nevada	1½c
Connecticut	1c	N. Dakota	½c
Indiana	2c	Ohio	1c
Maine	2c	Pennsylvania	1c
Maryland	1c	S. Carolina	1c
Massachusetts	2c	Texas	1c
Michigan	2c	Utah	2c
Minnesota	2c	Wash.	2c & 10c
Missouri	2c	W. Virginia	1c
Montana	1c & 5c	Wyoming	1c

Revenue from the gas tax increase in South Carolina would be specifically earmarked for state schools, while in Massachusetts two bills propose that revenue from increased gas tax together with additional ten dollar registration fee be used to make uniform the premiums on compulsory motor vehicle liability insurance. With these two exceptions, all other increases would

apparently be for road and highway purposes. None of these bills has passed either house of the legislature. The Massachusetts bills have received unfavorable committee action.

Legislation authorizing counties and cities to levy gasoline taxes at the rate of 3 cents and 2 cents per gallon are under consideration in California and Nevada, respectively.

Diesel motor fuel taxes would be greatly increased by bills in California and Washington proposing increasing the tax to 7½ cents and 15 cents a gallon, respectively.

Existing "temporary" and "emergency" gasoline taxes would be continued or made permanent in Idaho, Massachusetts, New York, Ohio, Pennsylvania and West Virginia. In Idaho a four-year extension has passed the house.

The bill increasing Colorado's gasoline tax rate from 4 to 6 cents per gallon to raise funds for an expanded highway construction program has been given final passage by the State Legislature and sent to Governor Knous for signature.

Estimated to raise about $25,000,000 in additional revenue during the next six years (the life of the bill) the 2-cent added tax will be split between state and local governments, with 50 per cent going to the state highway department, 44 per cent to the counties and 6 per cent to the cities.

Announce Wisconsin Road Plans

The Wisconsin state highway construction program for 1947, estimated to cost $20,542,000 and embracing about 180 projects, was announced by E. L. Roettiger, state highway engineer, at the recent convention of the Wisconsin Road Builders' Association in Milwaukee.

Of the total, 108 projects call for state highway construction to cost $16,237,000, about 55 for secondary road jobs costing $2,973,000, and 14 for urban improvements costing $1,332,000.

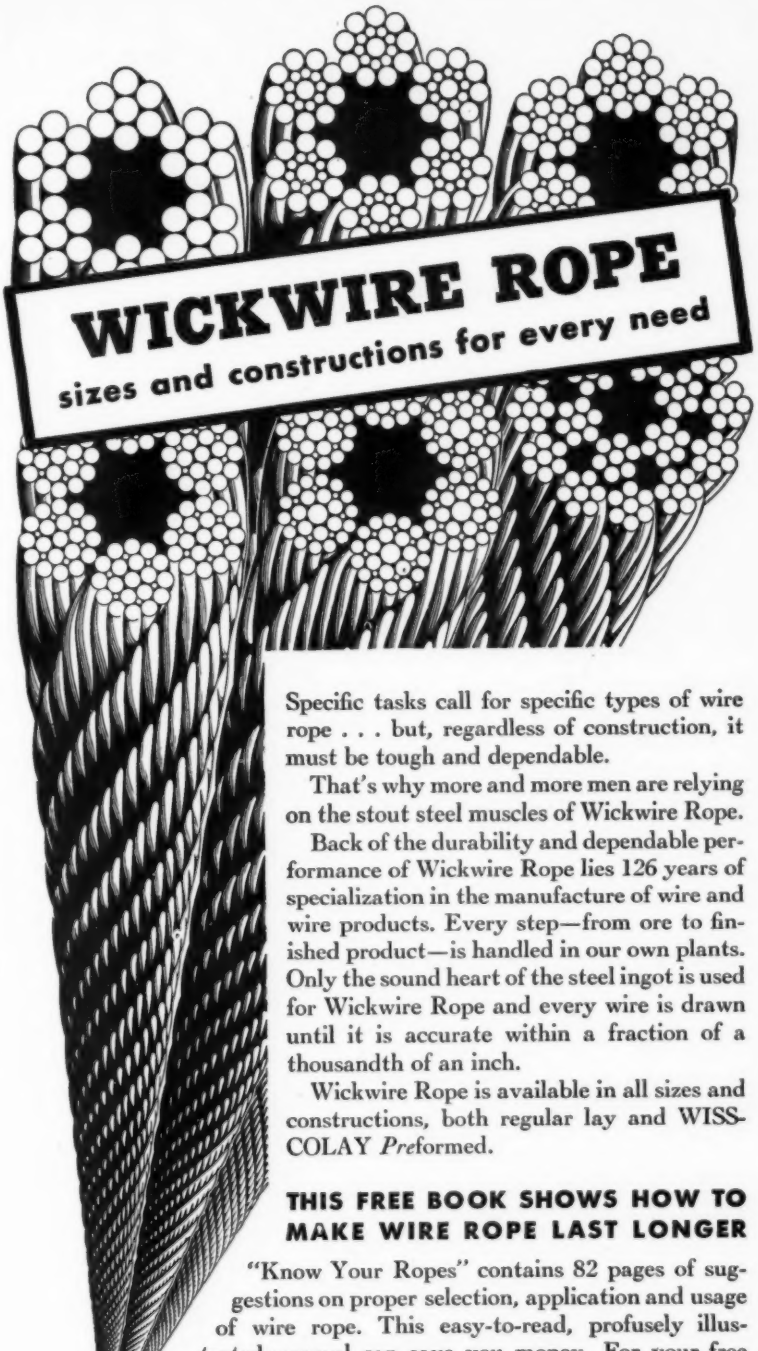
Tax Diversion in Oklahoma Perils Highway Program

Facing the loss of federal funds because of diversion of automotive taxes to other uses, Oklahoma needs approximately $39,000,000 in the next biennium to continue its highway program on the basis of the last two years, Governor Turner declared in his recent message to the Oklahoma Legislature.

The new governor quoted excerpts from a letter of Commissioner Thomas H. McDonald of the Federal Public Roads Administration pointing out that provisions of the 1945 Oklahoma Legislature in appropriating surplus general funds for highway purposes offset the state's diversion of highway funds to unrelated purposes only until last Dec. 31.

Oklahoma's auto license tax and farm truck tax now goes for schools and 1 cent of the 5½-cent gasoline tax goes

(Continued on page 238)



Specific tasks call for specific types of wire rope . . . but, regardless of construction, it must be tough and dependable.

That's why more and more men are relying on the stout steel muscles of Wickwire Rope.

Back of the durability and dependable performance of Wickwire Rope lies 126 years of specialization in the manufacture of wire and wire products. Every step—from ore to finished product—is handled in our own plants. Only the sound heart of the steel ingot is used for Wickwire Rope and every wire is drawn until it is accurate within a fraction of a thousandth of an inch.

Wickwire Rope is available in all sizes and constructions, both regular lay and WISS-COLAY *Pre*formed.

THIS FREE BOOK SHOWS HOW TO MAKE WIRE ROPE LAST LONGER

"Know Your Ropes" contains 82 pages of suggestions on proper selection, application and usage of wire rope. This easy-to-read, profusely illustrated manual can save you money. For your free copy write Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Massachusetts.

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CF&I

Field NOTES

Rigger's Tool

Here's a handy tool for riggers that can save torn and blistered hands when used correctly. An open eye on the bottom of the tool provides easy means for attaching the tool to the cable. After placing the cable in the eye of the tool, drive in a cone-shaped

• This handy tool will save a rigger much wear and tear on his hands.

wooden wedge in the direction of the cable "pull." The weight of the cable will draw the wedge tight and prevent the cable from feeding through the eye. Various sizes of wedges may be used for working with different sized cables. The large handgrip on this tool and eye for tackle enable the rigger to use the tool quickly and safely for various uses.

Removing Broken Axe Handle

Removing a broken axe handle from the axe-head may sometimes prove vexing—if you don't know of this easy method. It is not necessary to remove the wedge lock in the end of the handle, just pour water on the ground until you have thoroughly wet a spot about 18 inches in diameter and push the bit of the axe into the wet soil to within one inch of the broken handle. Now apply heat to the eye of the axe with a blow torch, if one is handy, or pile chips over and around the head and ignite. The broken handle will soon burn and loosen so that it can be removed. Be sure and let the axe remain in wet soil until the head of the axe is cool and the temper of the bit will not be impaired.

Before driving the end of the new handle into the axe-head, dampen that end slightly with glycerine which will act as a lubricant and allow you to drive the handle into the eye easily. And as glycerine has a great affinity for water, it will absorb moisture, swelling the handle in the eye.

W. P. Houser

A Note of Caution

"In your January, 1947 issue on page 26 under Field Notes, you published an article on a gasoline pump. This system using compressed air to remove a fluid from a drum is a very practical one but not for inflammable fluids such as gasoline. When the air is used to displace the gasoline from the drum, a very highly explosive mixture will be created inside the drum and serious explosions could result."

Carl J. Scheve
Comdr., CEC, USN
Charleston Naval Shipyard
Naval Base, S. C.

Blasting Circuits

Usually when blasting operations are of such proportions as to require the use of power from nearby lines, the power obtained from these lines is almost invariably of the alternating variety. This usually means that the connection for the blasting switch is taken from the lighting mains which almost without exception consist of a three-wire, single phase system supplying 220-110 volts. The center lead of this type of power supply is grounded at the transformer installation and again at the service or entrance switch at the point where the power is dispensed.

Electrical Leaks

This means that any connection from an outside wire (black) to the center wire (white) will give you 110 volts, and a connection from black wire to black wire, outside to outside, will develop 220 volts. The white wire being grounded, any connection from the black wires to earth will develop 110 volts or may even blow the entrance switch fuse if the contact is maintained. All this is leading up to the point that if such grounded current is used for firing blasts serious trouble is invited. The reason for this statement is quite obvious when the fact is considered that almost without exception some electrical leaks are present in every blast, and when such blasts are fired with grounded current it is practically inviting the firing current to take any short cut path back to the transformer. Which, of course, means that whenever sufficient current is dissipated from the blast circuit, the detonators are robbed of the current essential to heat the filaments to the firing point and a partial misfire occurs. This, as every experienced blaster knows, is particularly true when the series type of circuit is employed where each detonator adds resisitance to the circuit.

End Holes Fire

On many occasions with the series circuit, one experiences a shot where only the end holes fire and the center ones remain quite intact. This type of misfire is directly traceable to leakage conditions in the blast at the instant when the current is applied and some current immediately bleeds off from the circuit, flowing through the conducting elements in the earth to emerge somewhere near the end holes where it again enters the series of detonators and flows from there on to the transformer, etc.

This may happen even if totally ungrounded firing current is applied and is merely mentioned here to indicate the serious leakage conditions found in many poorly wired blasts.

Final Precaution

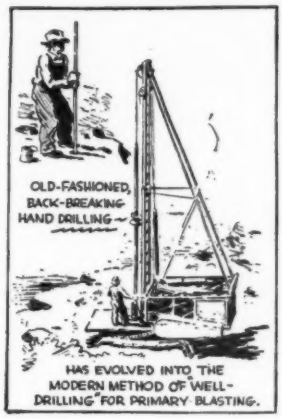
The most practical method for supplying ungrounded current is by means of inserting a small 1 to 1 ratio tranformer in the supply line to the blasting switch. This means tying to the 220 volt legs of the power supply which will deliver ungrounded current of both amperage and voltage sufficient to supply any blast of practical limits.

The next and final precaution offered here is to confine the shot to a short series coupled in paral- the parallel circuit where every detonator gets an equal share of the current when the wire is of lel to the blast line or to use only ample size and splices are well made.

Myron C. Ziemke

The Labors of a Modern Hercules—

CRUSHED STONE



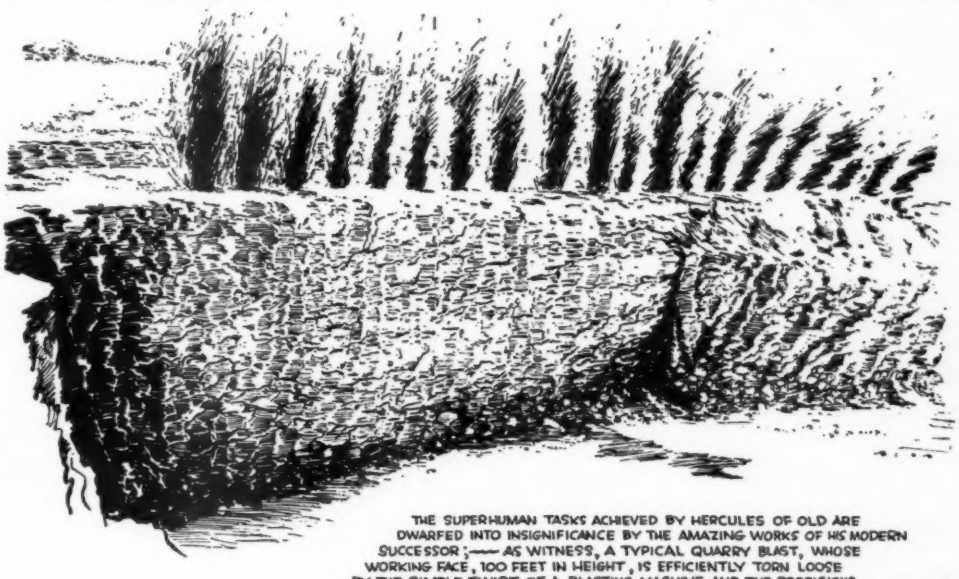
OLD-FASHIONED, BACK-BREAKING HAND DRILLING—

HAS EVOLVED INTO THE MODERN METHOD OF WELL-DRILLING FOR PRIMARY BLASTING.

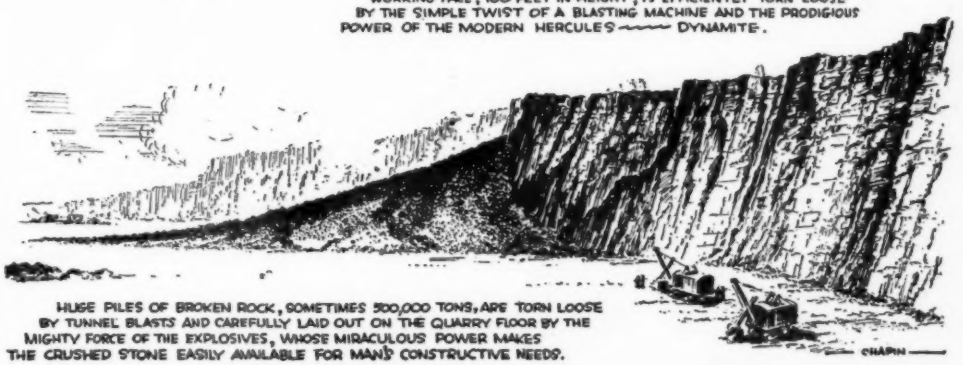
MODERN INDUSTRIAL EXPLOSIVES
HELP TO PRODUCE ABOUT
160 MILLION TONS
OF CRUSHED AND BROKEN STONE ANNUALLY!
1700 QUARRIES AND MINES PRODUCE THIS HUGE OUTPUT FOR USE IN THE CONSTRUCTION OF BUILDINGS, HIGHWAYS, DAMS, BALLAST ON RAILROADS, RIP RAP AT DOCKS AND EMBANKMENTS, AND AGRICULTURAL LIMESTONE.
THINK OF IT—THE CRUSHED STONE INDUSTRY IS POURING INTO THE INSATIABLE MAW OF OUR GARGANTUAN CONSTRUCTION JOB OVER 14,000 TONS OF COMMERCIAL SIZES OF CRUSHED STONE EVERY HOUR—OR
4 TONS EVERY SECOND!

THE ANCIENT METHOD OF WATER SOAKING WOODEN WEDGES FOR ROCK SPLITTING—

HAS BEEN REPLACED BY POWERFUL AND EFFECTIVE HIGH EXPLOSIVES.



THE SUPERHUMAN TASKS ACHIEVED BY HERCULES OF OLD ARE DWARFED INTO INSIGNIFICANCE BY THE AMAZING WORKS OF HIS MODERN SUCCESSOR;—AS WITNESS, A TYPICAL QUARRY BLAST, WHOSE WORKING FACE, 100 FEET IN HEIGHT, IS EFFICIENTLY TORN LOOSE BY THE SIMPLE TWIST OF A BLASTING MACHINE AND THE PRODIGIOUS POWER OF THE MODERN HERCULES'—DYNAMITE.



HUGE PILES OF BROKEN ROCK, SOMETIMES 300,000 TONS, ARE TORN LOOSE BY TUNNEL BLASTS AND CAREFULLY LAID OUT ON THE QUARRY FLOOR BY THE MIGHTY FORCE OF THE EXPLOSIVES, WHOSE MIRACULOUS POWER MAKES THE CRUSHED STONE EASILY AVAILABLE FOR MAN'S CONSTRUCTIVE NEEDS.

—CHAPIN—

HERCULES

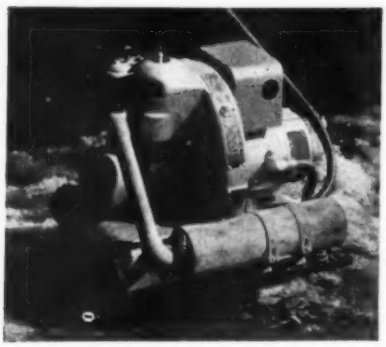
HERCULES POWDER COMPANY
INCORPORATED
972 King St., Wilmington 99, Del.

Equipment you ought to KNOW ABOUT

Generator Booster

Manufacturer: Homelite Corp., Port Chester, N. Y.

Claims: A portable gasoline engine driven starter-booster that gives high cranking speed and strong spark necessary for starting in sub-zero weather. Easily connected to the battery terminals, the full capacity of the generator plus the current from the battery are fed into the starter, making quick starts possible. The unit is light-weight and can be carried to any truck or construction machinery whether on the road or in a garage. The generator can be used for quick charging as well as booster service and is available in sizes to fit all types of applications.



Rubber-Coated Glove

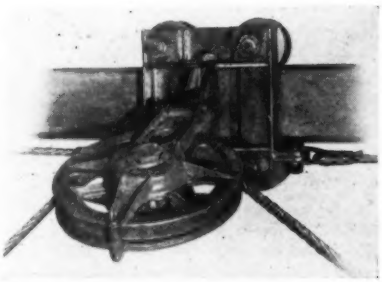
Manufacturer: United States Rubber Co., New York, N. Y.

Claims: A rubber-coated canvas work glove that is said to offer better protection to the hands and to have superior wearing qualities which will make it useful to many industries. The product is made by dipping the canvas in liquid rubber up to the wrist and then vulcanizing. The result is a tough, water-proof glove which is said to outlast many pairs of ordinary canvas gloves.

Monorail Trolley

Manufacturer: Sauerman Bros., Inc., Chicago, Ill.

Claims: Latest in the way of trolleys for carrying tail blocks on monorails in power drag scraper systems is this new unit which

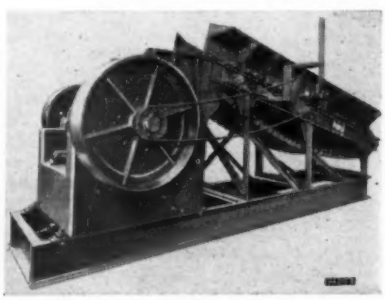


is designed to ride the monorail on four, double-flanged, steel wheels. The trolley mounts a Durolite Block, through which the drag scraper cables pass. Adaptable to hand or power shifting, the trolley will easily pass over changes in the direction of the monorail.

Apron Feeder

Manufacturer: Pioneer Engineering Works, Minneapolis, Minn.

Claims: Built around a unit assembly without sideboards, the feeder can be furnished either with vertical or with flared sideboards, thus making three models available. Each of these models can be furnished with any one of three drives; for gear motor, for conveyor drive, or for drive from the crusher. This provides nine



combinations of the feeder, which can be secured in five lengths from 6′ to 14′ and in four widths from 30″ to 48″. Shown here is a 14′ feeder installed to feed a primary breaker. The feeder is arranged for clutch control from an operator's position.

Small Tournapull

Manufacturer: R. G. LeTourneau, Inc., Peoria, Ill.

Claims: Built to answer the need for a small, high speed scraper unit on small yardage projects, the Model D. Tournapull has many new developments in design. Powered by an 85 HP gasoline engine, this prime mover is equipped with the new E-4 Carryall Scraper, having a load limit of four tons and a struck capacity of 3.3 yards. The unit is self-loading, has four speeds forward, four reverse, and travels up to 23 mph.

New electric control by individual motors, new type differential and new type and size of pneumatic rubber tires are some of the other features of the Model D.

Diesel Power Units

Manufacturer: International Harvester Co., Chicago, Ill.

Claims: Production has started on two new diesel power units—Model UD-18A (125 h.p.) and Model UD-14A (76 h.p.)—which are four-cycle units with the same bore and stroke. The UD-18A has six 4¾″ x 6½″ cylinders and the UD-14A has four. Both models deliver more power without increase in weight over the UD-18 and UD-14 models which they displace. A new cylinder head arrangement, improved nozzles, and redesigned precombustion chambers give them higher compression and great efficiency in converting fuel energy into power. Exhaust manifolds are located on the injection side of the engine resulting in cleaner combustion and greater power output for the engines.

The units are available for many different kinds of jobs in a variety of equipment combinations from single engines to complete power units ready for application to large scale operations requiring heavy duty power equipment.

(Continued on page 246)

SIMPLE CONVERSION MOUNTINGS Haiss simplified design of the Model 75 provides for quick interchange of creepers and wheels in the field. Standard parts. No shop work required.

When loading is tough and you can't keep trucks moving fast enough for profit, put your money on a Haiss. It's the Loader that's built to crowd a stock pile or bank and move it up to 8 yd.-a-minute speed . . . the Loader that's engineered to dig *anything* a man can shovel and do its own clean-up scraping. Haiss Loaders cost more, because they're worth more. They're worth more, because they're superbly engineered for greater economy. Investigate now how Haiss Hi-Speed Loading can save time and lower cost of your materials handling. Catalogs containing complete information will be mailed promptly on request.

Haiss is now a wholly-owned subsidiary of Pettibone Mulliken Corporation of Chicago. With new management and much larger resources, Haiss now can do a still better job for its customers . . . better machines and servicing, larger production, quicker deliveries. Its machines are money-makers for their owners.

GEORGE HAISS MANUFACTURING CO.
144th Street & Park Avenue
New York 51, N. Y.

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS

Irrigation Canal

(Continued from page 207)

and this big machine is at work on a 90-foot rock cut just south of Kings River.

The 9-W Bucyrus-Monighan dragline is a diesel machine, deriving its main power from a 540 horsepower Fairbanks-Morse engine. It has a structural steel boom 200 feet long and a 9 cu. yd. bucket which is being used to dig remarkably close to the canal limit lines when the size of the machine is considered.

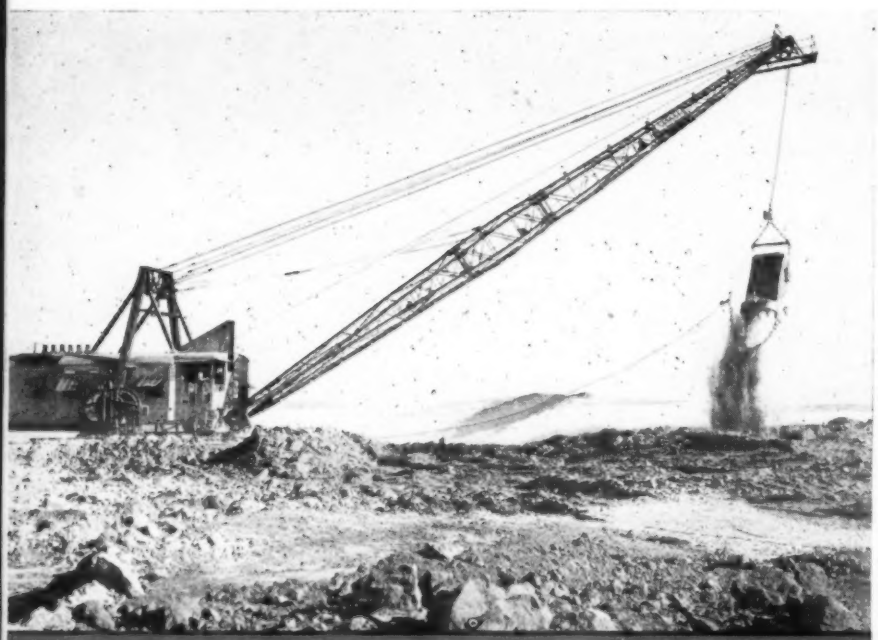
All the normal steps the big dragline will follow in shallower cuts have been encountered in the 90-foot Kings River cut. A smooth path for the large round digging base was shaped by a Caterpillar Model D-8 tractor, carrying a cable controlled bulldozer blade. The big Monighan then walked in and started digging. Normally this big machine would remove every cubic yard of material within the pay limit lines of the canal before making a step back away from the face, but a hard ledge of disintegrated granite rock cropped up in the path of the Monighan.

Rather than shake the machine with punishment, the operator was given orders to dig only to rock and move back. After a few hundred feet of ledge rock was exposed, powdermen and drillers moved in with their equipment.

A geophysical rotary drill is being used to put down 45′ holes on a 15′ grid pattern. Holes are sprung and then loaded with approximately ¾ lb. of Atlas Canyon Bag Powder per cubic yard of material. Primacord is used to detonate the shot. A Chicago Pneumatic wagon drill is used to put down a series of slope holes to trim the rock slopes. Air is supplied by two Sullivan 210 cfm compressors hooked in tandem to a four-inch Rainmaker header line.

After blasting, the Monighan walks back to the edge and digs the broken rock away. It is expected that this system of dig and shoot may have to be followed through some of the other rocky sections, especially where the rock is solid. The dragline has already demonstrated that it will successfully dig limited deposits of disintegrated granite, though not at top speed.

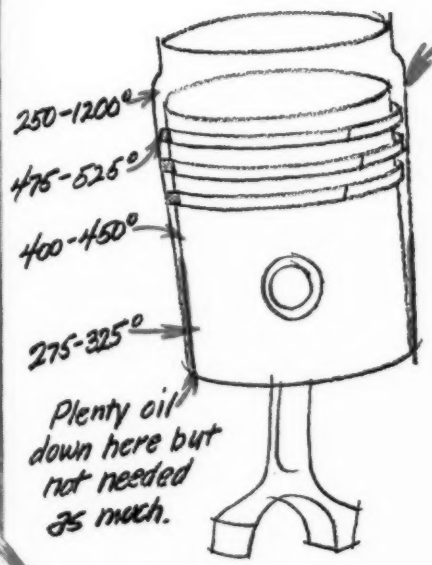
Because it is desirable for top output that each bucket full of material be heaped as it comes out of the pit, the bottom of the canal floor is being dressed to final grade by a Caterpillar D-8 tractor and bulldozer blade. The last 12 inches of excavation generally is being pushed forward so it will be in the range of the bucket. Aside from this practice the big machine is not getting any "breaks," but is digging the canal sides and backslope sections to grade. In hard rock the canal slopes are being dressed to neat line by jackhammers and light charges of dynamite.



● Above: Near Friant Dam, this Bucyrus-Monighan 5-cu. yd. walking dragline is roughing out a section of canal that will meet up with piece being dug by Morrison-Knudsen's dragline. Below: Caterpillar D6 tractor with LeTourneau bulldozer making the final grade on a section of the Friant-Kern canal. A concrete cross drainage canal will be made on this grade and the large irrigation canal will be built over it. The Northwest dragline in the background is digging out the cross drainage canal.

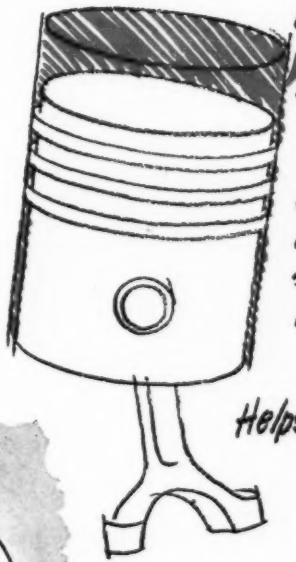
LUBE MEMO

Idea for preventing tapered cylinders!



Liners wear tapered like this— Most wear at top because ordinary lube oil scoots off hot metal, Leaves top of barrels bare.

Plenty oil down here but not needed as much.



RPM DELO DIESEL ENGINE LUBRICATING OIL stops this kind of wear. Contains adhering agent which hugs hot metal surfaces most oils leave bare.

Helps prevent blowby.

DIESEL ENGINE RPM DELO LUBRICATING OIL

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THE CALIFORNIA COMPANY • Denver, Colo.
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • New York

(Continued from page 210)

quently proposed to the legislature.

New Mexico

Pointing out that approximately $700,000 in federal airport funds had been allocated to New Mexico for the current fiscal year, Gov. Thomas J. Mabry told the New Mexico legislature that "state aid, in many instances, will be necessary before we can obtain full advantage of the federal act."

New York

Terming airports "the key to the full potential development of aviation," Gov. Thomas E. Dewey, in his address to the New York State legislature, pointed out that although the growth in their number has been rapid, "the increase has failed to keep pace with the growth of the demand for commercial air service." He urged the enactment of legislation "to require that federal funds allocated within this state in aid of airport construction and development be used in a manner approved by your state aviation to insure that equal and fair treatment be given to each section of the state."

• Le Tourneau Tournapulls on an airport project near Johnstown, Pa., involving over one million yards of earthmoving.

North Dakota

Bills to create a State Aeronautics Commission, to be designated as the sole agent to accept federal aid for airports, were introduced in the North Dakota legislature. Introduced in the Kansas legislature at the recommendation of Governor Carlson was a measure to establish an aeronautical division within the Kansas Industrial Development Commission.

Oklahoma

Enactment of a 2-cent tax on aviation gasoline, to provide the State Aviation Commission funds for the development of the industry, was proposed in Oklahoma by State Senator Frank Mahan. A Nebraska proposal called for reduction of that state's present 5-cent tax on aviation gasoline, which, it was pointed out, is higher than in any neighboring state.

Oregon

An Oregon proposal for increased taxation of aviation gasoline, with the receipts to be distributed to counties and cities, was opposed by Gov. Earl Snell in his message to the Oregon legislature. "An examination of the records," he said, "discloses that the proposal would produce a small amount of revenue and hardly sufficient to justify discrimination as between states with consequent losses to us. Uniformity in this regard is highly desirable. It might be in order for Oregon to appoint a legislative committee to meet with similar committees from our adjoining states for a discussion of this and related subjects. The development of airports in our state, however, is a very important matter and should receive all possible encouragement."

Vermont

Gov. Ernest W. Gibson of Vermont urged encouragement of

DREDGES

HYDRAULIC
DIPPER
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

ENGINEERED STRENGTH FOR UNLIMITED PERFORMANCE

"For heavy loads and rough roads"

An improved, rugged gooseneck for heavy duty. Deep wide flange main beams run the full length of the trailer. Reinforced cross members and outriggers are channel sections. Oscillating axles take the twist out of rough road hauling. Entire frame of continuous electric welded construction.

Get the details from your nearest equipment dealer.

L. J. HUGHES CO.
1029 Brooke Blvd., Reading, Pa.

airport development by private capital, but told the Vermont legislature, "The time may come when the state will have to help municipalities on their air transportation problems even as it has had to help municipalities on highway problems."

Virginia

At a recent special session of the Virginia legislature a resolution was approved providing for a study before the next legislative session of means of matching federal airport funds.

Wisconsin

Development of an adequate system of public airports, financed through state-federal cooperation, subject to State Aeronautics Commission approval, was advocated in Wisconsin by Governor Goodland. The state commission suggested enactment of a state tax on aviation gasoline to provide airport development funds, and also proposed appropriation of $2,000,000 by the legislature to match federal-aid for airports in Wisconsin in the next two years. The commission indicates that these measures should provide sufficient funds to keep the state in step with nation-wide airport development.

Wyoming

Because of state constitutional restrictions, Wyoming's matching of federal-aid airport funds "must be solely by political subdivisions," it was pointed out by Gov. L. C. Hunt, who urged the Wyoming legislature to make it possible for local governments to participate. "Without exception," he said, "political subdivisions in Wyoming are not in a position financially to match federal funds. Unless authority is granted political subdivisions to raise these funds by a special mill levy, development of aviation and the establishment of feeder lines will be seriously retarded. I urge, therefore, your favorable consideration of legislation allowing cities or counties, as the case may be, to levy 2 mills for airport construction. There is only one other possible method of fund-raising, which is the issuance of bonds, but the mill levy seems the most direct approach."

Placer Platinum

(Continued from page 203)

the usual power hand tools. A welding shop with full equipment for oxy-acetylene and arc welding is located adjacent to the machine shop. Truck and tractor repairs are handled in a separate repair shop, and an electrical shop, carpenter shop and tire repair shop are also maintained.

The recovery of the platinum metals is effected in each case by gravity concentration. Unlike gold, platinum does not readily amalgamate with quicksilver, so that no mercury is used in the riffles. Concentrates washed from the sluices in periodic cleanups contain considerable heavy black sands of magnetite, chromite, and ilmenite, which are removed, again by gravity separation, before shipment. Cleanups are first cleaned of the bulk of the black sand by washing over a Wilfly concentrating table, and concentrates are then dried for air cleaning in a homemade blowing machine. This unit is arranged to feed the dust, after size classification by

YOU'LL FIND IT ON PAGE 20

Among general contractors, one of the most popular Blaw-Knox Buckets is No. 672, rated ¾ Cu. Yd. It's a general purpose two-line, lever arm type that digs like a mole. On page 20 of Catalog 2076, there's a photo of it at work, and on page 34 you will find a complete table of weight, measurements and other data you need. Of the more than 100 types and sizes of Blaw-Knox Buckets, this may be the one to speed your work. Write us for *Catalog No. 2076.*

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2074 Farmers Bank Building
Pittsburgh 22, Pa.

Bucket Selection Made EASY
Catalog 2076

BLAW-KNOX CLAMSHELL BUCKETS

SMOOTH POWER Two-Cylinder

THE NEW ONAN AIR-COOLED
"CK" ENGINE 10 H.P. 4-CYCLE

Two-cylinder horizontal opposed design gives the new, heavy-duty CK engine unusual running smoothness. Short, rigid crankshaft . . . 2-inch diameter main and 1⅝-inch diameter rod bearings . . . pressure lubrication . . . axial-flow cooling fan . . . aluminum construction giving 4-to-1 cooling advantage over cast iron . . . weighs only 97 pounds and fits neatly into 15″ x 19″ x 18″ space. Designed to solve engine power problems in industry, agriculture and other fields. Proven by thousands in use today . . . now in mass production . . . prompt delivery.

Also has: Built-in precision governor . . . downdraft concentric carburetor for wide-angle operation . . . oil bath air cleaner . . . fuel pump . . . oil pressure gauge . . . crankcase fumes exhausted to carburetor . . . hermetically sealed magneto ignition coil with easy-to-get-at breaker points, 2-qt. oil capacity.

ONAN ELECTRIC PLANTS—A.C.—350 to 35,000 watts in standard voltages and frequencies, D.C.—600 to 10,000 watts, 115 and 230 volts. Battery chargers —500 to 3,500 watts, 6 to 115 volts.

ONAN AIR-COOLED ENGINES—CK: 2-cylinder opposed, 10 h.p.; BH: 2-cylinder opposed, 5.5 h.p.; 18: 1-cylinder, 2.5 h.p.

WRITE FOR illustrated, complete specifications

Electric Starting
Built-in electric push-button or automatic starting is optional; adds little to overall dimensions.

D. W. ONAN & SONS INC.
3531 Royalston Ave. Minneapolis 5, Minn.

Onan PRODUCTS

ONAN 4-Cycle ENGINES

hand sieving, through a horizontal current of air, which carries off the lighter particles of sand, but permits the metallic grains to drop through. The crude platinum metals thus cleaned for shipment average about ten per cent impurities. Shipment is made by mail in canvas-wrapped moose hide or calfskin pokes.

The term platinum is loosely applied to all metals of the platinum group, including platinum, iridium, rhodium, palladium, osmium, and ruthenium, all of which, along with small amounts of gold, are recovered by the refiner from the Goodnews Bay crudes.

Before the war, manufacture of jewelry took the largest part of the platinum supply, although even at that time, industrial uses were increasing. Wartime government controls prohibited use of platinum in jewelry, since the supply was barely adequate for war uses, such as aircraft engine spark plug tips and magneto contact points, catalysts in nitric and sulfuric acid production processes, and electrical uses. Pure platinum, like pure gold, is soft, and its durability is increased by alloying with other metals of the group. The most common jeweler's alloy is 10% iridium-platinum, while high-specification electrical purposes may require an iridium content as high as 30%.

No Commercial Electricity

The remote location of the mine is responsible for operating problems not otherwise encountered. Power supply is a fundamental consideration, in the absence of any commercial supply of electricity, and requires shipment each season of some 3,000 drums of diesel fuel. Dragline units are powered by Caterpillar diesels.

Anticipating heavier stripping requirements in the future, a Bucyrus-Monighan 200-W 5-cu. yd. walking dragline has been ordered, for which additional electric power will be supplied by the installation of a second 625 kva Alco unit to be mounted in a central power station now under construction.

All freight for the district is routed by steamer from Seattle, a trip of about 2,000 miles, with

PAGE FROM A BLASTER'S NOTEBOOK

DEPEND ON PRIMACORD TO GET THE JOB DONE EASIER, MORE EFFICIENTLY, WITH LESS HAZARD

EASY HOOK-UP — Because all PRIMACORD connections are simply tied square knots and half hitches, kept in plain sight above-ground, easily inspected.

SHOT EFFICIENCY — Because every cartridge in contact with PRIMACORD is efficiently detonated. Every cartridge *goes* with the added force of a primer cartridge — and each hole *goes* with full power, in a planned sequence that relieves burden and produces better fragmentation.

LESS HAZARD — Since PRIMACORD is not sensitive to sparks, friction, stray currents or ordinary shock, it reduces normal loading and handling hazards.

There's really no mystery about PRIMACORD efficiency. It's just plain, proved fact — fact that's backed by the years of experience of pit and quarry men the nation over.

Plain Primacord — for practically all holes and trunk lines.

Reinforced Primacord — for deep holes where extra tensile strength or resistance to abrasion is desirable.

Wire Countered Primacord — for extremely ragged deep holes or where maximum resistance to abrasion is important.

P-24

PRIMACORD • BICKFORD
***Detonating* FUSE**

THE ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT

service available on a two or three trips per season basis. Boats and barges are maintained by the mining company for lighterage service at Goodnews Bay. Communication is maintained with the "outside" by a company radio station, and mail and emergency supplies are carried by air, 450 miles from the central Alaska towns of Anchorage and Fairbanks.

Under such conditions, it is necessary to be largely self-sufficient in all phases of the operation, maintaining complete shop and repair facilities, and carrying substantial spare parts inventories. Not only are shut-downs costly to the seasonal operator, but infrequent freight service requires careful advance planning.

The mine camp has grown in the last ten years to a village of over 50 buildings, reflecting both the necessity of a completely independent plant in such a remote location, and the progressive policy of the company in maintaining relatively high standards for the accommodation of the personnel. Unmarried employees occupy six bunkhouses, and 18 cottages are furnished for families who do their own housekeeping. All units are equipped with oil heat, running water, and radio receivers. Washing machines, drying room, and shower cabinets are located in a central wash house, although many of the individual residences are equipped with modern plumbing facilities. The cook-house is a particular point of pride at Goodnews Bay, and the high quality of meals is uniformly the subject of comment by visitors. A recreation hall, known as the "Kashim," the native word for a village meeting place and ceremonial hall, is furnished with two bowling alleys, ping pong table, and juke box, as well as 35-mm sound motion picture machines for weekly movies. Post office, radio communication station, and general store are located in the village of Platinum, 11 miles by road from the mine camp.

Officers of Goodnews Bay Mining Co., which is an Alaska corporation, are Andrew Olson, president; Edward Olson, vice-president and mine manager; Charles J. Johnston, treasurer and business manager; and R. W. Vinnedge, secretary. Year-round offices are maintained in Seattle.

Steam Cleaning

(Continued from page 205)

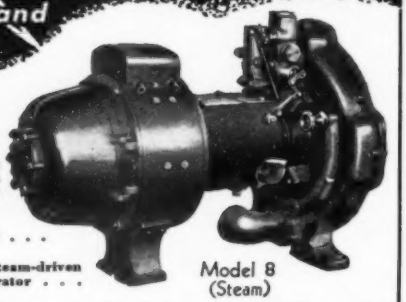
od effective for cleaning wire rope. When a shovel is torn down, the rope is removed and given a foot by foot inspection after it has been cleaned. After the rope is dried it is given a hot bath lubrication and placed on a reel until the shovel or dragline is ready to return to the job.

In F & S operations we use approximately 25,000 feet of wire rope annually in sizes from 3/16 to 1½ inch, both hemp and steel center. During the war we were forced to use whatever type of rope was available. However, we are now able to buy rope which best suits our specifications and job and we use only preformed. We have found that preformed rope outlasts non-preformed rope by a considerable margin, and also that the preformed is much the safer rope to handle.

Where preformed rope has been used exclusively, we find there is much less sheave groove rebuild-

HERE'S your ideal small power plant for lights, ventilating fans, or other electrical equipment.

MOON Generators TURBO and BELT DRIVEN for LIGHT and POWER



Model 8 (Steam)

Important MOON features include:

1. GOVERNOR AND COMPOUND WINDING on Steam-driven models prevent excess voltage output which might injure electrical apparatus . . .
2. ONLY 2 EASY-TO-REACH OILING POINTS . . .
3. AUTOMATIC CUT-OFF on larger capacity Steam-driven models prevents overload damage to generator . . .

Send now for illustrated circulars

Models from 1 to 7½ KW capacity.

Moon MANUFACTURING CO.

ESTABLISHED 1893

118 North Jefferson St., Chicago 6, Illinois, U. S. A.

Send in your old Moon generators for rebuilding now—we can give prompt service.

L-O-N-G-E-R SERVICE LIFE IS SOLD WITH EVERY Owen Bucket

Grit-proof bearings for Alemite lubricated center shaft minimize wear on hinge castings. Wide bearing surfaces also reduce wear and assure permanent shell alignment.

Owen hinge stop design holds bottom sheave block upright and broad counterweight is shaped to protect cables and sheaves from contact with abrasive materials. Yes, Longer Service Life is sold with Every Owen Bucket.

THE OWEN BUCKET COMPANY

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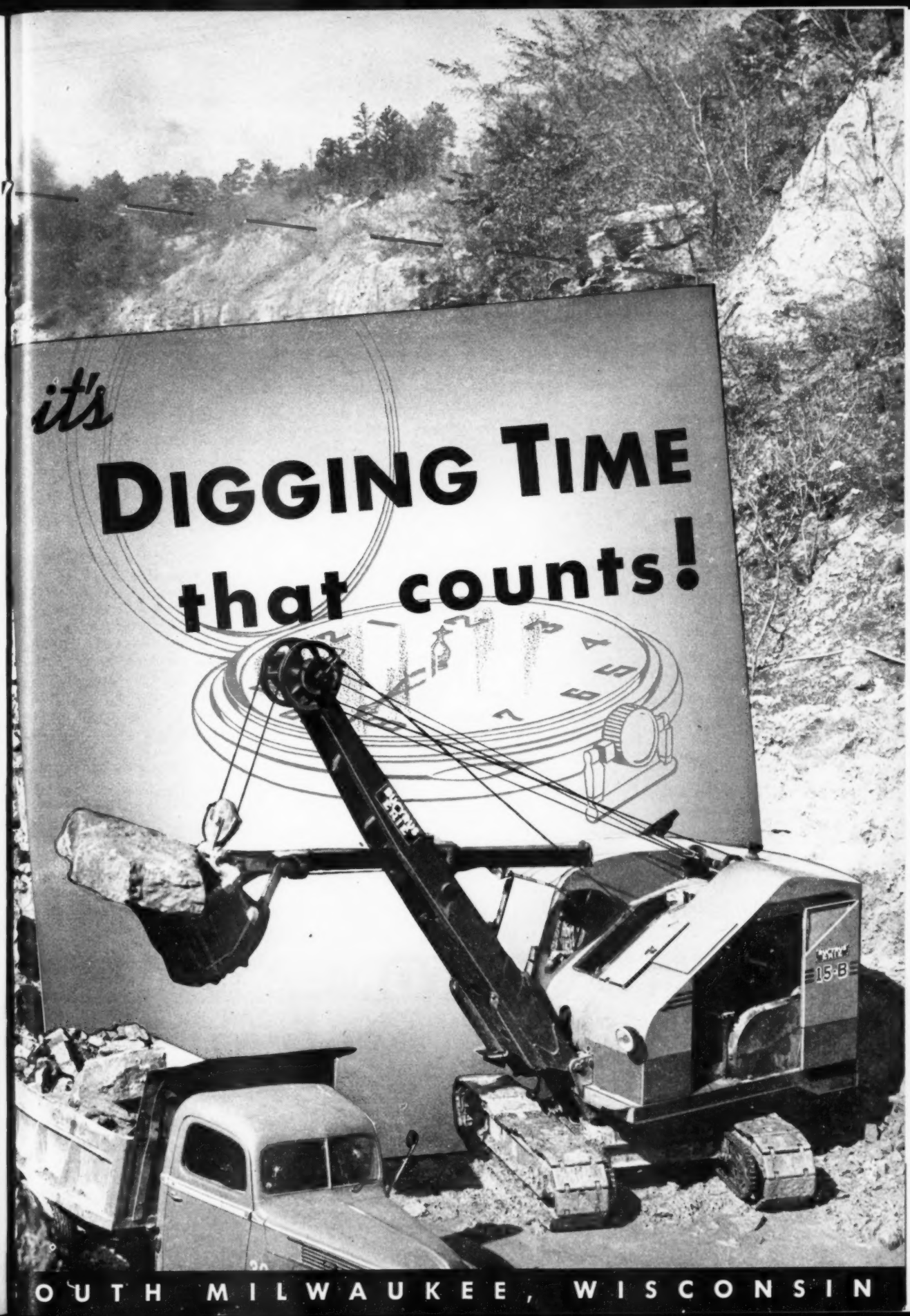
BRANCHES: New York, Philadelphia, Chicago, Berkeley, Calif.

OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAY'S WORK

A MOUTHFUL AT EVERY BITE


it's
DIGGING TIME
that counts!
15-B
SOUTH MILWAUKEE, WISCONSIN

ing to be done, and less repair necessary to the lagging on the drum.

In rebuilding sheave grooves and making drum repairs, we use an 85 Lincoln rod, electric welding, then machine the groove back to its original depth and diameter. When lagging is worn on the drums, we use the same rod and same method. We have found that our welding units constitute one of the most important departments of our whole maintenance setup.

Every shovel, dragline, tractor, scraper, dump truck, or pickup which is given a general overhaul at our shop is given a standard factory paint job before being returned to service. Job by job comparisons on paint costs where steam cleaning was used, and on paint jobs where steam cleaning was not used, prove that steam cleaning cuts paint job cost by 33 per cent.

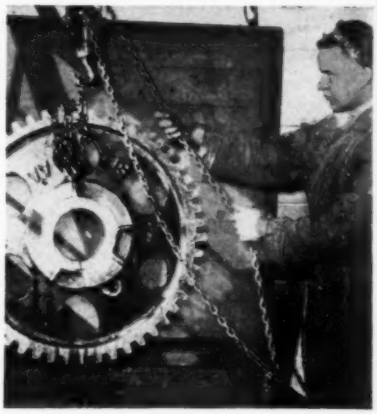
Two shovel repaint jobs, without pre-steam cleaning ran $104, and $116. Average $110. Paint jobs on two similar shovels which had been given pre-steam cleaning averaged $73.86.

Our main job, from the maintenance and repair angle, is to keep the equipment operating with the least number of layup hours. As well as cutting overhaul costs, we know that precleaning by steam substantially reduces overhaul time.

Care is always taken after steam cleaning of any piece of equipment to properly re-lubricate all bearings and other wearing surfaces before the equipment is put back into service.

List of Major Equipment Served

1 5-yd. Bucyrus-Monighan 5-W Dragline
2 2-yd Bucyrus-Erie 44-B Shovels
1 1½-yd. Bucyrus-Erie 37-B Shovel
1 1½-yd. Koehring 603 Shovel
1 1½-yd. Koehring 604 Shovel
2 Austin-Western Jaw Crushers
1 Austin-Western Roll
4 RD-8 Caterpillar Tractors
2 YD-18 International Tractors
3 No. 12 Motor Grader Caterpillars
1 10-yd. LeTourneau Carryall
16 7-yd. GMC Straight Dump Trucks
14 8-yd. GMC Semi-Trailer Dump Trucks
4 8-yd. GMC Straight Dump Trucks
2 Peterbilt Transports
1 1½-ton GMC Utility Truck
6 GMC Pickup Trucks
2 Chevrolet Pickup Trucks



• A shovel propel gear is lowered into the cold solution tank. After remaining in solution 24 hours, the part will be allowed to drain above tank from one to two hours.

The C & F Teaming & Trucking Company was founded in 1913 as a partnership by John Corett and James Finlan. In 1940, the partnership was changed to a corporation and the name changed to The C & F Trucking & Contracting Company. L. M. Sheridan was made General Manager. Early this year, the name was changed to F & S Contracting Company when Mr. Sheridan, continuing as manager, became part owner. For the past 20 years, under the old partnership and under the corporation, James M. O'Neil has had charge of repair and maintenance work.

The company's work consists mainly of highway work, railroad grading, open pit mining, and ore hauling.

NEW TARPAULINS

Waterproof — Mildew-Resistant Grommeted

These tarpaulins are made of *new* heavy, durable War Surplus canvas. They are treated to be fire and mildew-resistant as well as waterproof. The following may be obtained—while stock is available:

6 ft.x8 ft.	$ 5.28	12x16	$21.12
8x10	8.80	12x18	23.76
10x10	11.00	14x16	24.64
10x12	13.20	16x20	35.20
12x14	18.48	20x20	44.00

(Shipped Freight Charges Collect)

BOX WRENCHES

AAF War Surplus, new, heavy-duty, double-end, chrome steel. Sizes, 1-1/2"x1-7/16", $2.25; 1-3/8"x1-1/4", $2.25; 1"x15/16", $2.00; 7/8" x13/16", $1.80; 11/16"x5/8", $1.40. (Add 10c each, postage and handling.)

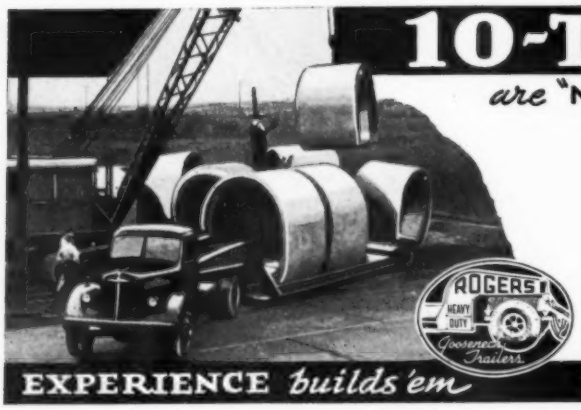
SOCKET WRENCH SETS

3/4" drive, heavy duty, 12 point. Set of 13, 1-1/16" to 2". Long and short T handle, ratchet. All in metal case, $28.50*.

WAR SURPLUS RAINCOATS, used, painted-out stencil marks, $12.00 dozen*.

SEND CHECK FOR AMOUNT
*Items marked * shipped freight charges collect.*

MINNEAPOLIS OUTLET STORE
1623-G Nicollet Ave., Minneapolis 4, Minn.



10-TON CULVERT SECTIONS
are "MADE TO ORDER" for this
ROGERS TRAILER

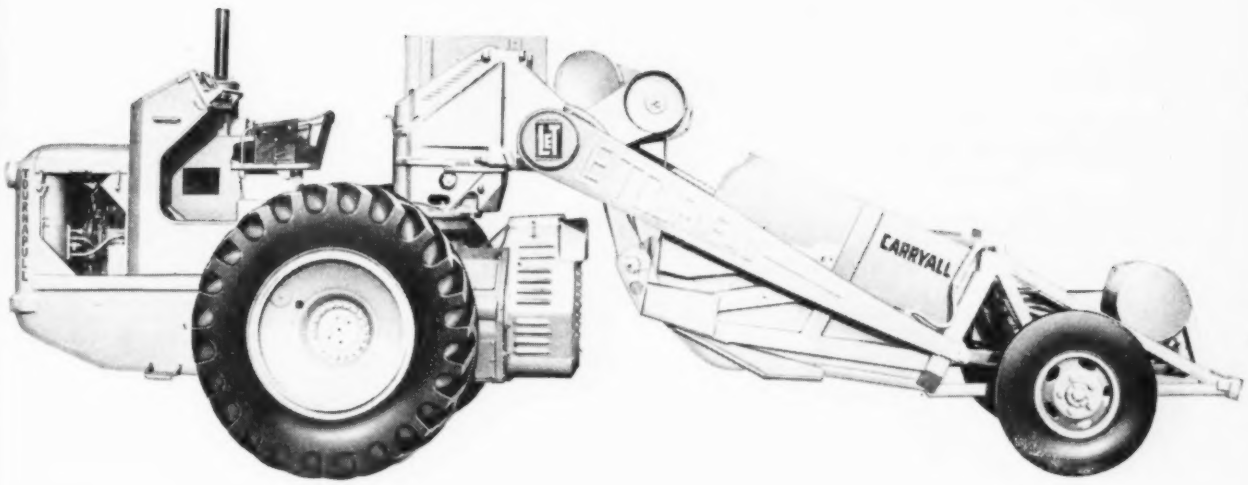
The broad, sturdy deck of this Rogers trailer readily accommodated four huge culvert sections. This 40-ton load was swiftly and easily transported to the construction location.

Write for the catalog illustrating a complete range of sizes and types.

ROGERS BROTHERS CORPORATION
136 ORCHARD STREET ALBION, PENNA.

EXPERIENCE *builds 'em* PERFORMANCE *sells 'em*

DIRTMOVER
TOURNAPULL



CLEARS slides; fills washouts; loads, hauls and spreads surfacing; strips and works gravel pits; digs stockponds; fills lots; levels building sites; grades and surfaces driveways or access roads; builds small dams or levees. Travels fast over pavements or cross country . . . no trailer or haul equipment needed. Continuous mesh Tournamatic transmission . . . no delay for shifting gears. Fills tank at any filling station.

SELF LOADING

3.3 YARDS PAY DIRT

85 H.P. GASOLINE ENGINE

TIRES { 14:00x32 PRIMEMOVER
9:00x16 ON CARRYALL

WEIGHS 7½ TONS EMPTY

Production per hour	
One-way haul	**Yards per hr.**
200′	48
400′	45
600′	42
800′	40
1000′	38
1500′	33
2000′	30
2500′	27
3000′	24
4000′	21
5000′	18

Above production figures based on average type scraper material, fairly level haul, good working conditions. Figures show production for 60-minute hour, one-man operation, no pusher.

LETOURNEAU PEORIA, ILLINOIS — JOB-PROVED Over 5000 Built and Shipped — **TOURNAPULLS**

SHOTS from the Firing Line

(Continued from page 219)

to the general revenue fund. Unless this highway fund diversion is halted or offset, as was done by the last state legislature, the state's eligibility for full participation in federal-aid highway funds will be threatened.

Federal highway legislation provides for penalties, in the form of reduced federal aid, against states diverting automotive taxes to non-highway purposes. Provision is made in the federal law for imposition of penalties up to a third of the total amount diverted to general uses from funds which were being used for highway purposes in 1934.

Announce $6 Million Highway Program for South Dakota

South Dakota's 1947 highway construction program will embrace 524 miles of roads at an estimated cost of $6,345,546, according to a recent announcement by Gov. George T. Mickelson as chairman of the state highway commission.

Governor Mickelson said the program completely matches the federal-aid construction fund of $3,500,000 which is allocated on a 56-44 per cent basis, and also will match about $565,000 of federal aid to secondary roads. Approximately 11½ per cent of the total estimated construction program is withheld to allow for state planning and cases of contracts exceeding estimates.

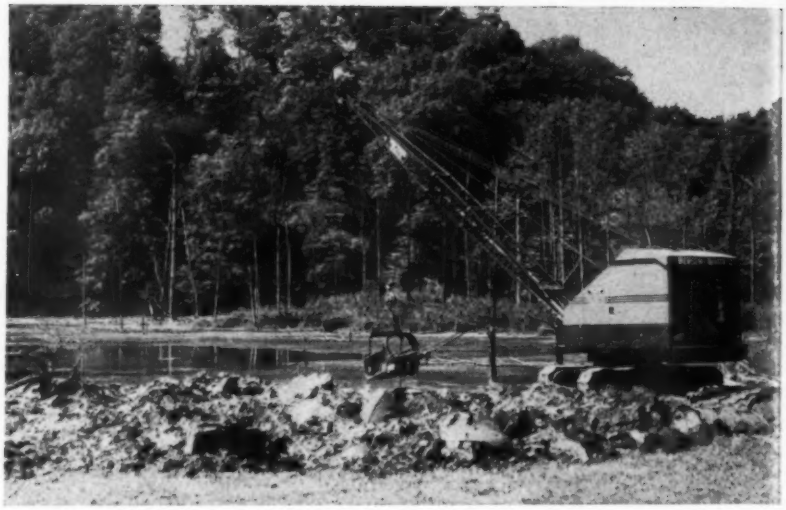
A total expenditure of $3,000,000 for maintenance is planned in addition to the 1947 construction program. This is the same amount that has been spent for maintenance the last four years.

Although the actual allocation of "regular" federal funds for construction was the same for 1946, the $12,000,000 program last year contained unused funds from four previous years and $2,000,000 in federal money for highways designated as federal strategic networks matched with state money on a 78-22 per cent basis. The strategic funds have been eliminated from this year's program.

An uncompleted balance of $7,547,354 for 600 miles of highway remains in the 1946 program, the governor explained. The 1946 program included 1,650 miles of highway.

The 1947 program calls for 125 miles of base course with Class A bituminous surfacing at an estimated cost of $1,440,000 and 106 miles of bituminous mat construction costing $873,760. Secondary road construction projects on the state trunk system totals 109 miles at an estimated cost of $1,007,000. Also included in the program are grading and construction of 182 miles of highway at an estimated cost of $3,032,900.

The 1947 program with that part of the 1946 program not yet placed under contract totals 682 highway miles at an estimated cost of $8,322,000.



• Bergen & Bergen, Franklin, Ind., use their ½-cu. yd. Bucyrus-Erie dragline to deepen north end of resort lake to provide mooring space for small boats at Patten Park, Ind.

Increase Truck Weight Limits For Kentucky Roads

Rigid enforcement of Kentucky's new truck weights and measures law was inaugurated last month. The law which became effective January 1, provides increases in weights on certain designated highways approved by the Commissioner of Highways. The war-time limit prescribed 28,000 pounds while, under the new law, the limit is 42,000 pounds.

State highways in Kentucky have been

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD CO.
52-54 Church Street
New York, N. Y.

Heavy-duty trailers from 5 to 100 tons

Safe for the biggest loads

Hauling contractors everywhere depend on Jahn Heavy-Duty Trailers for safe, fast and economical moving of their heaviest loads like this 110,000-lb. transformer. Deep, wide flange main beams run the full length of the trailer. Cross-members and outriggers are I-Beam sections. Improved, fabricated gooseneck adds greater built-in strength. Positive, self-equalized braking at each wheel regardless of position of axle assures maximum safety. See your nearest Jahn dealer for details.

JAHN TRAILERS ALL OVER THE WORLD

Reg. Trade-Mark

C. R. JAHN COMPANY
1349 WEST 37th PLACE CHICAGO 9, ILL.

divided into three weight classes. A limit of 42,000 pounds has been established for Class A roads; 30,000 pounds for Class B roads and all other roads are limited to 18,000 pounds. Weight applies to both the truck and its gross load. Very few trucks have complied with the law relative to posting weights on the cab door, according to reports. The truck operator is required to have painted in distinctive lettering not less than 3 inches high the weight for which weight tax has been paid. He must have his truck properly licensed and the driver must have his operators license. Rigid enforcement of all the provisions of the law may be expected.

Comstock Retires; Vernon New Regional Reclam. Director

The retirement, effective March 31, 1947, of H. D. Comstock from his position of Regional Director, Region VI, Bureau of Reclamation, Billings, Montana, has been announced by Acting Secretary of the Interior Oscar L. Chapman. Assistant Regional Director Kenneth F. Vernon was named to succeed Mr. Comstock as Regional Director.

Commissioner of Reclamation Michael W. Straus said that he accepted Mr. Comstock's request for retirement after more than 41 years of service in western Reclamation on the condition that Mr. Comstock make his services available in a consultant capacity upon his retirement.

Mr. Vernon has been with the Bureau of Reclamation for the past 13 years and has served with distinction in many field posts including periods on the Central Valley Project in California and in the Branch of Design and Construction at Denver, Colorado, where he participated in work on numerous western Federal irrigation projects, including those in the Missouri Valley program. During a three-year tour of duty in the Washington Office of the Bureau of Reclamation, Mr. Vernon was Progress Control officer and a specialist on the Missouri Basin work.

R. C. Wilson and H. C. Turner Head Turner Construction

The Turner Construction Company, New York City, announced recently that its Board of Directors had elected Robert C. Wilson as chairman of the Board and H. C. Turner, Jr., as president of the company, both effective March 17.

Mr. Wilson entered the employ of the company in June, 1907. He has been a vice president since 1919 and a director since 1928. Mr. Turner succeeds Admiral Ben Moreell who has resigned to go with the Jones & Laughlin Steel Corporation, Pittsburgh. Mr. Turner was born in 1902, was graduated from Swarthmore College in 1923 and then entered the employ of the Turner Company. He has been a director since 1932 and a vice president since 1938, in charge of the Philadelphia office.

Report Urgent Need for More Irrigation in Philippines

The urgent need for more irrigation in the Philippine Islands is emphasized by Paul V. McNutt, first United States Ambassador to the Philippine Republic, in an article appearing in the March issue of the Reclamation Era, official publication of the United States Bureau of Reclamation.

The article recalls that, "during enemy occupation, when the price of rice reached prohibitive heights, the hungry of Manila would stealthily run after passing rice trucks, disregarding the armed convoys, and puncture the rice sacks. After the trucks had passed, leaving a trail of falling grains, they would sweep them up with brooms, and hurriedly rush home with the precious particles of food—mixed with the dirt from the street. Philippine officials and farmers exclaimed then, 'If we only had more irrigation systems'!"

At the very top of the food production program now is the construction of new irrigation projects, as well as the repair and improvement of existing irrigation systems. Of about five million acres devoted to rice culture, one-third, or about 1½ million acres are irrigated. Of this less than 300,000 acres are irrigated by government systems. The article also reports the vast destruction of irrigation structures and canals during the war, along with valu-

The Things that Add up to WIRE ROPE Economy

A recent survey shows that the majority of wire rope buyers consider "Easy Handling" and "Length of Service" the two most important factors in determining final rope cost.

If you have not tried Preformed "HERCULES" Red-Strand) Wire Rope you, too, would like its easy handling, smooth spooling and long life. Give it a chance to *prove* its money saving ability! We invite your inquiries.

And more and more wire rope users are finding, by actual experience, that they can depend on Preformed "HERCULES" (Red-Strand) Wire Rope for these two top-ranking features. As it is available in a wide range of constrtictions – both Round Strand and Flattened Strand – they have *also* found that in "HERCULES" there is a *right rope* for any heavy duty purpose.

"HERCULES"
REG. U.S. PAT. OFF.
RED-STRAND
WIRE ROPE

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
ESTABLISHED 1857
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If your blast hole drilling requirements are not extensive enough to keep a blast hole drill busy full time, it might pay you to investigate a machine that can handle your drilling as well as earn money for you on contract, rental, or water well jobs over a wide territory. Bucyrus-Erie 21-W and 22-W drills, widely popular among water well drillers, will put down your blast holes with the same speed and power as larger Bucyrus-Erie drills and, in addition, have the spooling capacity to drill the deeper holes which water well work requires. Don't overlook these machines in planning your future equipment setup. 20W46

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South Milwaukee, Wisconsin

able construction equipment and invaluable plans and other records.

The Philippines are now irrigation-minded, Mr. McNutt says, and expects that this attitude will continue.

"The Philippines are looking forward to the day when the construction of multiple-purpose projects — irrigation combined with hydroelectric power and flood control—will be a reality," the article concludes.

Among other principle articles in the March Era is one "Yakima-Tieton Celebrates," reporting the observance last St. Valentine's Day of the final payment of the Tieton District farmers on the construction cost of the project, and giving a brief history of the project.

Several States to Consider Super Toll Highways

Ambitious plans for the construction of large-scale superhighways to be financed through issuance of toll-amortized revenue bonds will be live issues in several 1947 state legislative sessions, a survey discloses.

One of the most far-reaching proposals will be pressed in Ohio where enabling legislation will be sought for a 1,000-mile network of five toll-financed superhighways costing an estimated $650,000,000. Until paid for by the toll charges, the roads would be controlled by a state commission to be appointed by the governor. They would become the property of the state after retirement of the revenue bonds.

Support for the Ohio program is being sought by the Ohio Turnpike Committee, with offices in Cleveland, whose membership includes manufacturers, road contractors and labor representatives. Two of the proposed superhighways would follow different routes across Ohio to the Indiana state line from a contemplated extension of the Pennsylvania Turnpike in the east. Another would run from Cleveland through the Columbus area to Cincinnati. A fourth would link the Cleveland area with Erie, Pa., and the New York State Turnpike. The fifth would run between Toledo and Cincinnati.

That the plans for major toll highway facilities in one state mushroom into proposals for similar connecting developments in others is illustrated by the fact that one of the underlying aims of the Ohio program is to help create superhighway facilities linking the Pennsylvania Turnpike with Chicago. Thus, if the Ohio program materializes, it would stimulate a need for the construction of similar facilities, toll or otherwise, in Indiana, Illinois and Pennsylvania.

A 1943 Illinois law, upheld in 1945 by the Illinois Supreme Court, created a State Superhighway Commission with authority to issue revenue bonds for the construction of toll superhighways. Although there were proposals at the time of the law's enactment for construction of high-speed toll highways between Chicago and St. Louis, Chicago and Rockford, and East St. Louis to the Indiana state line, no action to carry these plans into actuality has yet been taken by the commission.

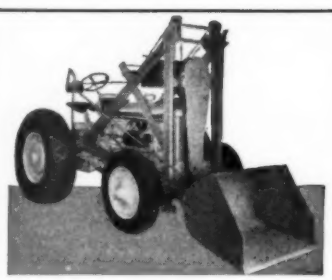
Pointing out that considerable money is currently available to Illinois state, county and city agencies for the construction of express transportation facilities, John J. Schommer, chairman of the Illinois Superhighway Commission, advises that there has thus far been no call for active participation of his commission to form plans for toll superhighways. He added that his commission must obtain an appropriation from the 1947 Illinois legislature if it is to do anything within the next two years.

Pennsylvania Turnpike

Whether the Pennsylvania Turnpike should be extended through additional toll facilities or regular highways is expected to be an issue during the 1947 session of the Pennsylvania legislature. It now runs 160 miles between Harrisburg and Pittsburgh. Proposals call for its extension east to Philadelphia and west to the Ohio state line. Highway-user organizations have repeatedly gone on record against any further toll facilities in the state, claiming that the present toll turnpike was justified only by peculiar factors not present elsewhere.

Construction of a four-lane, toll-superhighway across the State of Washington, from the Puget Sound area to Spokane, was recently advocated by Gov. Mon C. Wallgren. Such a highway, he pointed out, would link the shipping and industrial area of Western Washington with the agricultural area on the eastern side of the state.

Other states in which there have been recent suggestions of toll-financed highways include Colorado, where the idea was advanced for the construction of a toll road from Loma into Rangely if



Front - End
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Extensible Booms,
⅝-cu. Yd., Bucket 8-foot lift,
Backfiller Blades

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ELKHART INDIANA

• Partially dried material removed from creek bottom by a dragline on a levee project is distributed by this Traxcavator on a Caterpillar D-7 tractor owned by Jos. L. Pohl, Nevada, Missouri.

sufficient state funds are not available for all needed road improvements into the booming oil field area.

New York State during the past year abandoned an earlier proposal for toll financing for the "thruway" now being constructed from New York City to Buffalo. The toll idea was dropped on the basis of engineering studies indicating that traffic that would use the new highway under toll operation would be insufficient to finance the project.

The way was paved for the imposition of tolls on two roads already constructed in New York State when the State Court of Appeals recently dismissed a suit challenging the constitutionality of a 1945 state law authorizing Westchester County to charge tolls for the operation of motor vehicles over the Hutchinson River and Saw Mill River Parkways.

Only state in which a toll-financed highway is currently under construction is Maine, where $15,000,000 in bonds were sold early in 1946 by the Maine Turnpike Authority for construction of the Kittery-to-Portland section of the Maine Turnpike. Under authority granted by the 1945 Maine legislature, it is planned to eventually extend this toll facility from Kittery to Fort Kent at a total cost exceeding $100,000,000.

All toll roads in the United States, according to Federal Public Roads Administration figures for 1940, total only 346.6 miles. This includes the 160.7 miles of the Pennsylvania Turnpike which is the country's longest toll road and 46 per cent of the nation's entire present toll mileage.

Cost a Problem

Financial success of the Pennsylvania Turnpike has led to the many proposals for construction of similar facilities elsewhere, but analysis shows there is little basis for comparison between the Pennsylvania project and current proposals. An outright PWA grant of $29,000,000 was made toward the $70,000,000 cost of the Pennsylvania Turnpike, whereas no such grants of 42 per cent are available to currently-proposed projects. Also, since the Pennsylvania Turnpike was constructed the cost of labor, materials and equipment has risen sharply to bring the total level of highway construction costs to more than 50 per cent above prewar levels in many areas.

These changed factors, together with the bogging down of regular postwar highway construction programs in the face of present construction difficulties despite the availability of funds, indicate the improbability of any widespread duplication of such facilities as the Pennsylvania Turnpike in other states in the immediate future.

Award New Contracts on Four Reclamation Projects

Bureau of reclamation projects in four states are involved in recently awarded contracts totalling nearly two million dollars—the Yuma Mesa Division of the Gila project in Arizona, the Tucumcari project in eastern New Mexico, the Boise project in Idaho, and the Deschutes project in Oregon.

The largest contract in the group calls for the construction of the earthwork, mortar lining, and structures for laterals from the "A" and "B" Canals, and for the completion of ditches to deliver the water from the "A" Canal to farms on Unit No. 1 of the Yuma Mesa Division of the Gila project. Completion of this work is necessary in order to provide for the irrigation of an additional 7,800 acres of public land that are now scheduled to be opened

Smooth, non-grabbing action that adds countless miles to tire life.

Balanced holding power for positive stopping under all conditions.

No let-down in efficiency on steep grades or under prolonged use.

Long wear life with fewer adjustments to keep 'em on the road.

These are some of the advantages afforded by GATKE *CUSTOM-BILT* Brake Blocks that make a world of difference in meeting today's tough maintenance requirements.

Ask your GATKE Jobber or write.

GATKE *Custom-Bilt* BRAKE BLOCKS for all APPLICATIONS

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BLOCKS SETS ROLLS SHEETS

GATKE CORPORATION

228 N. La Salle St., Chicago 1, Ill.

to homesteading by veterans during the fiscal year 1948.

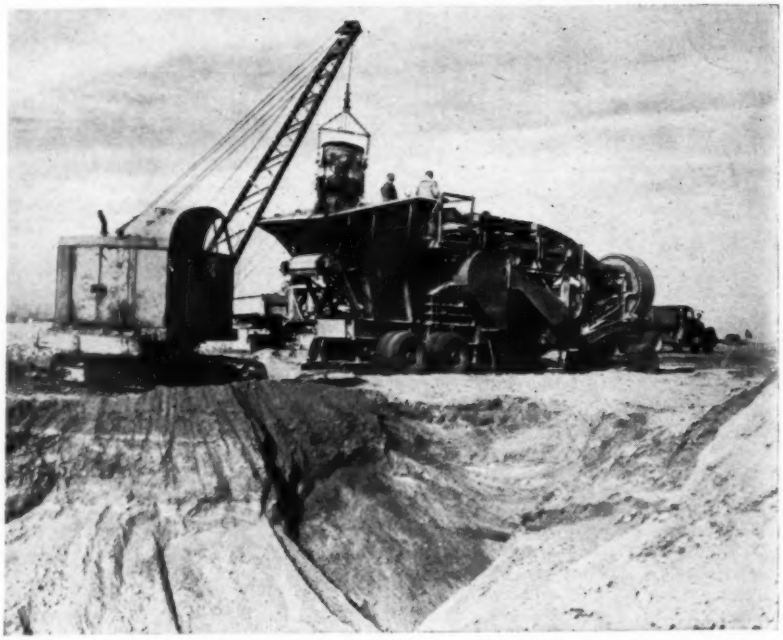
Major construction items in the contract include 189,000 cubic yards of excavation, 55,200 cubic yards of compacted embankment and backfill, 1,000 cubic yards of concrete for structures, and installation of more than 97 tons of reinforcement bars, fabric, gates, and miscellaneous metalwork. The contract was awarded to the V. D. Case Company, Long Beach, California, on its low bid of $496,873. The work must be completed in about eight months.

An $875,759 contract for construction of laterals and a 3.3-mile section of the Conchas Canal on the Tucumcari project in eastern New Mexico has been awarded by the Bureau of Reclamation to J. A. Terteling and Sons, Inc., Boise, Idaho, the low bidder. All work must be completed within seven months after the company receives notice to proceed.

The project will provide irrigation facilities for 45,000 acres of land now generally devoted to livestock grazing and some dry farming. Irrigation water will supplement the livestock industry and stabilize the general economy of the area. The project is expected to provide irrigated farms for approximately 560 families.

Work on the project was stopped early during the war, but was resumed in April 1944, as a war food project. The work to be done on the Conchas Canal will extend it to the Hudson Canal. The laterals to be constructed are in Units 2, 3, and 4.

Major items in the contract include approximately 260,000 cubic yards of common and rock excavation, placement of nearly 5,600 cubic yards of concrete requiring about 8,400 barrels of cement, installation of nearly 15,400 lineal feet of concrete pipe in sizes varying from 18 inches to five feet in diameter, and installation of more than 240 tons of reinforcement bars and other metal work.



• Bucyrus-Erie ⅜-cu. yd. shovel feeding a Cedarapids crushing plant in Door County, Wis.

The contract for the Deschutes project construction was awarded to the Adler Construction Company, Redmond, Oregon, on its low bid of $165,300. Major construction items in the contract include 89,000 cubic yards of common and rock excavation, 1,500 cubic yards of concrete, nearly 3,000 lineal feet of concrete pipe varying from 18 to 36 inches in diameter, and the installation of more than 62 tons of reinforcement bars, gates, and other metalwork. The work must be completed in about seven months.

The Deschutes project ultimately will bring 50,000 acres of new land under irrigation, Commissioner of Reclamation Michael W. Straus said. At present 17,000 acres of new land are already receiving irrigation water, and 46,000 acres, in old established irrigation districts, are receiving a vitally needed supplemental supply.

The contract for clearing part of the site for the Cascade Reservoir, on the Payette Division of the Boise project, amounting to $348,700, was awarded to W. D. Zavalas, Oroville, California, the low bidder. The site must be cleared in 10 months.

Establish Record for Bentonite Production

Breaking sales records has become virtually a habit of bentonite producers. In 1945, for the seventh consecutive year, more bentonite was sold or used

ERIE BUCKETS

• Erie builds all types of buckets in various capacities and weights to meet the job and operating conditions. Choose the correct bucket for the job and you get maximum speed and output. Write for broadside on the complete Erie line of buckets.

THE COMPLETE LINE

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474 Geist Road

ERIE STEEL CONSTRUCTION CO.
ERIE, PENNSYLVANIA
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by producers than in any previous year, according to the Bureau of Mines, United States Department of the Interior. Output in 1945 exceeded the 1944 tonnage by five percent and tripled that of 1938.

The major markets for bentonite have been developed in the foundry and petroleum industries. Sales for use as a foundry-sand bond increased steadily during the war but declined 11 percent in 1945, when reconversion reduced foundry activity.

On the other hand, sales to the petroleum industry for use in drilling muds, required to control gas pressures, increased 34 percent in 1945, more than compensating for the loss of foundry business. Approximately 28 percent of the total output was used for drilling mud and the same percentage for foundries. A little over 25 percent was used for oil filtering and decolorizing, and the remainder in a wide variety of uses.

Almost 66 percent of the total output came from Wyoming — South Dakota area; 35 percent was produced in Wyoming and 31 percent in South Dakota.

The average value of bentonite at the mine has declined from $7.50 per ton in 1943 to $7.29 in 1945.

List Contracts for Columbia Basin Irrigation Project

Contracting firms handling more than $27,000,000 in construction jobs on the Columbia Basin Irrigation Project of Eastern Washington were listed recently by the Bureau of Reclamation:

South Dam — Bair-Crick Company. Contract $2,771,000.

Odair aggregates preparation—J. G. Shotwell. Contract $172,000.

Northern section of Main Canal—J. A. Terteling & Sons. Contract $1,548,000.

Bacon Tunnel and Bacon Siphon—T. E. Connolly, Inc. Contract $3,494,000.

Long Lake Dam—J. A. Terteling & Sons. Contract $1,770,000.

Southern section of Main Canal — Morrison-Knudsen Co. Contract $619,000.

First section of West Canal—Winston-Utah Construction Co. Contract $2,800,000.

First section of East Low Canal—Winston-Utah Construction Co. Contract $3,977,000.

Adrian aggregates preparation — H. F. Green & Co. Contract $373,000.

Potholes Dam—Lytle, Amis, & Green. Contract $9,300,000.

Pasco Distribution System — J. A. Terteling & Sons. Contract $714,000.

Pasco Pumping Plant — James Construction Company. Contract $188,000.

Delaware Faces Problem Of Federal-Aid Funds

Delaware will have to spend "more than $5,000,000 at prewar prices before the highway system will be in the condition which it would normally have reached but for the interruption due to military necessity," W. W. Mack, retiring chief engineer of the Delaware State Highway Department, declared in his annual report.

Mack also pointed out that nearly $5,000,000 in federal funds for highway construction and improvement is available for Delaware but must be matched dollar for dollar by the state.

At the start of the current fiscal year last July 1, according to the report, there was $4,939,459.52 available to Delaware in federal highway construction funds, of which $2,692,841.50 was for the primary system, $1,641,766.20 for the secondary system, $191,537.82 for grade crossing, $408,114 for the urban system, and $5,200 represented a balance.

How Delaware will raise funds for matching federal aid for postwar highway construction will be one of the issues confronting the 1947 session of the Delaware Legislature.

St. Louis Asks Federal Funds for Airports

Milton M. Kinsey, chairman of the St. Louis City Airport Commission, announced the filing of applications for federal funds totaling $15,209,358 for improvement and expansion of Lambert-St. Louis Airport, development of the Columbia Bottoms site, and establishment of three smaller flying fields.

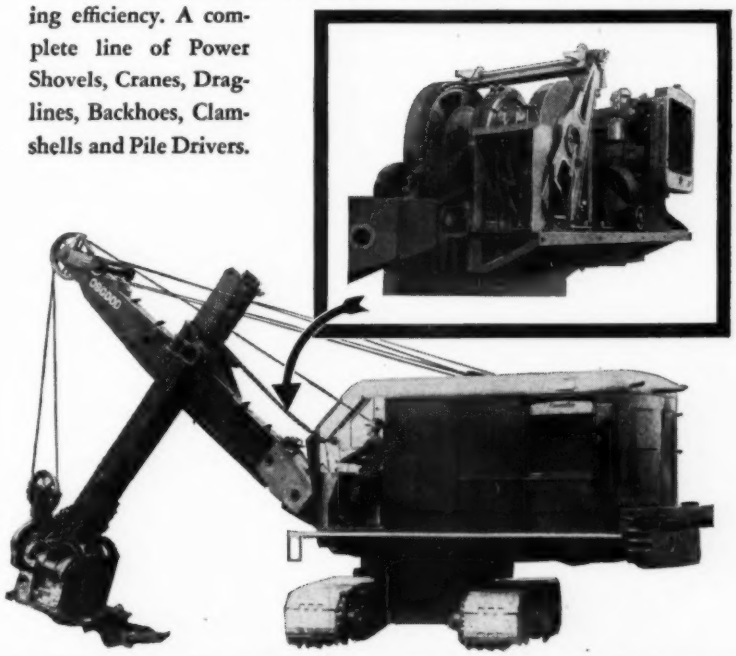
He said the individual applications listed $6,152,575 for expansion of the

UNIT Cast Steel CONSTRUCTION
for

- **Maximum Strength**
- **Permanent Shaft Alignment**
- **More Efficient Arrangement of Machinery**

The deck of an OSGOOD is a single, full length steel casting, acting also as support for the engine and counterweight. Unit cast steel construction assures a strong, solid base, free from vibration, that keeps shafts and other operating parts in perfect alignment. All operating machinery is mounted on this deck to provide maximum accessibility.

Plan now to choose an OSGOOD . . . designed for greater operating efficiency. A complete line of Power Shovels, Cranes, Draglines, Backhoes, Clamshells and Pile Drivers.



POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

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MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

municipal airport, $7,229,023 for the proposed Columbia Bottoms field, $537,440 for a smaller field at Morganford Rd. and River des Peres, $600,939 for a small field at Hampton and Columbia Aves., and $689,381 for enlargement of the Ross Airport, Baden.

Approval of the applications for federal aid, he said, would add sufficient funds to city bond issue appropriations to make up the total $35,413,124 estimated as necessary.

Need More Gas Tax For Pennsylvania Road Program

An increase of one cent in Pennsylvania's gasoline tax rate will be necessary if the state's five-year highway construction program is not to be delayed by higher costs and wages, it was declared by retiring Gov. Edward Martin. He asserted that the choice between higher taxes or construction at a slower pace should be left with the people.

Pennsylvania now has a 4-cent gasoline tax. The state distributes ½ cent of the yield to counties and in addition allocated a flat $8,500,000 a year to cities, townships and boroughs. The remainder is retained by the State Highway Department. A state constitutional amendment adopted by the voters in 1945 limits use of the funds to construction and maintenance of roads and bridges.

Shortly after he took office as governor in January, 1943, Martin announced a five-year, $516,000,000 highway program. At the outset much of the work was delayed because of wartime conditions. Under present-day conditions, he now estimates the cost of the extensive highway program at $700,000,000.

• **Freeman Beernash, Flint, Mich., uses his Bucyrus-Erie Dozer-Shovel on International TD-9 tractor to excavate a local basement.**

BIGGER PAYLOADS
with WELLMAN
Williams Type BUCKETS
• Exclusive features in design and construction make payloads bigger... at lower cost! Weight is balanced, not cumbersome. Extra strength is built into every part with the sturdy welded rolled steel construction pioneered by Wellman, the leader for over fifty years. A type for every service!
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NOT in the *Contract*

She was on her way home from a first aid course when she espied a man lying on the sidewalk, his face cradled on one arm, and the other arm twisted under him in a peculiar fashion.

Without a moment's hesitation, heedless of the gawking bystanders, she leaped astride him and began applying artificial respiration.

After several minutes of this, the victim spoke up: "Lady, would you please quit tickling me? I'm trying to hold a lantern for this fellow down in the manhole."

"Are you a good little boy?"

"Nope. I'm the kind of a little boy my mother doesn't want me to play with."

A colored porter in a hotel was asked why rich contractors usually gave smaller tips than poor contractors. "Well, suh," the porter answered, "the rich contractor don't want anybody t' know he's rich and the po' contractor don't want nobody t' know he's po'."

"But how on earth did you come to get so completely intoxicated?" asked the judge.

"I got in bad company, your Honor. You see, there were four of us. I had a bottle of whiskey—and the other three don't touch the stuff."

Mother: "Katie, you get off that sailor's lap!"

Katie: "But, Mother, I was here first."

A road contractor who has never learned to read or write has managed nicely by signing his checks with two crosses. His banker called him recently. "How about this check here, it's got three crosses?"

"My wife has social ambitions," explained the contractor. "She thinks I should have a middle name."

"Oh, Doctor," said the young lady, "will that scar show?"

"That, madam, is entirely up to you."

"He claims this job is making a monkey out of him."

"My poor fellow," said the kind old lady, "it must be dreadful to be lame, but just think how much worse it would be if you were blind."

"You're right, lady," agreed the beggar. "When I was blind I was always gettin' counterfeit money!"

"I think your husband dresses nattily."

"Natalie who?"

A Northern gentleman was being entertained by a Southern Colonel on a fishing trip. It was his first visit to the South, and the mosquitoes were so bothersome that he was unable to sleep, while, at the same time, he could hear his friend snoring audibly.

The next morning he approached the old darky who was doing the cooking—

"Sam," he said, "how is it the Colonel is able to sleep so soundly with so many moquitoes around?"

"Ah'll tell you, boss," the old darky replied, "de fust part ob de night de kernel is too full to pay any 'tenshun to de skeeters and de last part ob de night de skeeters is too full to pay any 'tenshun to de kernel."

Jim: "Yep, the engagement is off; she won't marry me."

Joe: "Did you tell her about your rich uncle?"

Jim: "Yeah. Now she's my aunt."

A man boarded a pullman and gave the porter $5 to wake him up when the train reached Podunk at 4 a.m. "Now, porter, I'm a very heavy sleeper, so you may have to drag me out of the berth, put my clothes on me, and carry me out to the platform. And no matter how much I resist, don't pay any attention."

Next morning the man awoke to find himself in New York. Boiling mad, he sought out the porter and roundly cussed him out.

The porter shook his head in admiration. "Boss, you sho' had got a temper, but it ain't nothin' to compare to the gent'man's that I put off the train this mornin' at Podunk."

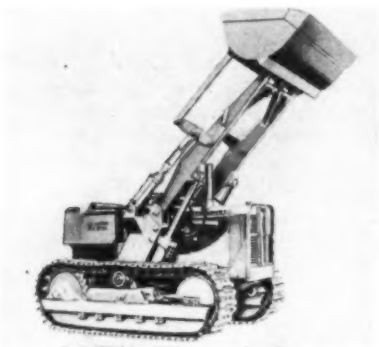
New Equipment

(Continued from page 222)

"Tracto-Shovel"

Manufacturer: Tractomotive Corporation, Findlay, Ohio.

Claims: The first in a line of tractor equipment to be built by its company, the Model TS-5 "Tracto-Shovel" is a tractor shovel to be used on the Allis-Chalmers HD-5 Diesel Tractor. The hydraulically-controlled bucket is operated by double-acting lift and dumping cylinders and it can be dumped or closed at any height. It has an automatic tilt-back to prevent spillage. Tractor - width buckets of one cu. yd. capacity are standard equipment, with bulldozer blades or special buckets optional. The shovel frames are mounted directly to the tractor and contain a 25-gal. capacity oil reservoir.



Overall length of the unit is 14 ft. 6 in., the width is 6 ft. 3½ in., and the height, with the bucket down, is 5 ft. 11⅝ in.

Percussion Bit

Manufacturer: Kennametal Inc., Latrobe, Pa.

Claims: A new percussion bit for drilling holes in hard rock. Of chisel type design, and possessing a hard wear-resistant Kennametal cutting edge, the bit is designed to be driven by percussion drilling machines. The manufacturer reports a total of 50 feet of holes 1⅜" in diameter have been drilled in solid granite with one of these bits before it was taken off the driving rod because of wear. Impressive footage figures are quoted for drilling in quartz, silica sand, limestone, and other hard substances.

Less compressed air is required for use with the bits and bits contain water holes in either bevel to eliminate danger of clogging while drilling wet holes. At the present time Kennametal bits are being manufactured in sizes of 1⅜" and 1⅝". (Picture shows bit before and after drilling 50 feet of granite.)

Notes from the manufacturers

Detroit Diesel Engine Division of General Motors, Detroit, Mich., has recently announced the opening of a model parts department at the company's factory in Detroit as an educational service to their distributors.

Beckwith Machinery Co., Pittsburgh, Pa., announces the appointment of George A. Scott as salesman for the company's Wilkes-Barre office. He will represent the lines of Beckwith-distributed equipment for the construction and road building industries in Clinton, Lycoming, Sullivan, Montour, Columbia, Northumberland and the lower section of Luzerne County.

International Harvester Co., Chicago, has announced price reductions that became effective before April 1 will apply to a selected list of products in the company's line of tractors, farm machines, motor trucks, and industrial power equipment.

Harnischfeger Corp., Milwaukee, Wis., announces the appointment of Ralph D. Holcomb as General Sales Manager in charge of directing all sales of the corporation.

Gar Wood Industries, Inc., Detroit, Mich., has named E. B. Hill as director of factory sales for the company. In his new position, Hill will supervise all factory sales activities, including those of the company's Buckeye Traction Ditcher and St. Paul Hydraulic Hoist divisions.

Hercules Steel Products Co., Galion, Ohio, has appointed Jack C. Gay to the post of Sales Engineer and named Vernon R. Teasley as the company's West Coast representative. Gay will handle sales and distributor problems in the territory east of the Mississippi.

Cooper-Bessemer Corp., Mount Vernon, Ohio, has promoted Horace Sanders to Assistant Southwestern District Manager in which capacity he will assist A. A. Burrell, Southwestern District Manager, in the administration of sales and service in that area. The company has also released news to all its suppliers and customers that it has established a "firm price policy" as a means of holding the price line both in connection with the sale of its diesels, gas engines and compressors and the purchase of component materials and parts.

Warner & Swasey, Cleveland, Ohio, has appointed four new distributors for Gradall earth movers. W. W. Williams Co., Columbus and Cleveland, has been assigned Ohio; Construction Equipment & Supply Co., Pittsburgh, will handle sales in Western Pennsylvania; Telford Equipment Co., Lansing, will cover Michigan, and Rupp Equipment Co., Buffalo, will service New York State with the exception of metropolitan New York.

New trade literature

Title: **"Tractor Catalog"**

Subject: This illustrated, 24-page, two-color catalog lists many of the applications for which International Industrial Tractors are used and illustrates some of the matched equipment available with them. Besides completely describing various model tractors with their respective specifications, the booklet presents the salient features of International's diesel and gasoline engines. A distributor listing is given on the back cover.

Where to Get: International Harvester Co., 180 N. Michigan Ave., Chicago 1, Illinois. Ask for Form A-103-JJ (Free).

Title: **"Air Tools for Contractors"**

Subject: Copiously illustrated, this 24-page bulletin shows air tools in action and demonstrates the versatility of such air operated tools as sump pumps, tampers, hammers, vibrators, drills, grinders, hoists, and other air tools. A complete line of portable compressors from the small two-wheel job to the large 500-CFM type is also shown.

Where to Get: Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Title: **"Highways Ahead"**

Subject: An industrial film presented by the Caterpillar Tractor Co. that is designed to promote the building of public highways and to improve

(Continued on page 248)

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

SMALL SHOVELS, CRANES AND DRAGLINES UP TO 2½ YDS.

Lorain L40 machine No. 9553, condition good, Waukesha 4¼ x 4¾", 35' boom, Hendrix drag bucket, 32" tracks, shovel front used 6 weeks, rope crowd. Location Florida. Price $8,000. Box 3211

Bucyrus-Erie gas-air shovel, GA-2, No. 4151, with 1 cubic yard manganese front rock dipper, 22'-6" boom with new wood, 16' handle, 4 cylinder 4" x 9", 275 cfm water cooled air compressor, powered with Waukesha WK-4 cylinder 6¾" x 8" gasoline engine, with recent repairs of over $1000, and with approximately $400 worth of spare parts. This machine is in good mechanical condition, and is being used daily loading coal. Available after March 20.

GARLAND COAL & MINING COMPANY
321 South Third Street
Muskogee, Oklahoma

MISCELLANEOUS EQUIPT.

1—27E Koehring paver
1—Type C Lakewood finishing machine
1—No. 3½ Freeman turntable
1—Koehring subgrade planer
1—No. 9 C. H. & E. Triplex water pump
Box 3212

2—Bucyrus-Erie dragline buckets—1 cu. yd. model AX (condition guaranteed)—$325 each.
1—Bucyrus-Erie backhoe (drag shovel) front for 29B or 33B machine (perfect condition). $1045.
Box 3213

TRACTOR CABS

Manufactured by

BUCYRUS-ERIE

For T14 — TD14 — TD18 INTERNATIONAL TRACTORS

IN STOCK—IMMEDIATE DELIVERY

— REDUCED PRICE —

Bucyrus-Erie Cabs are of an all welded construction.
They are designed to fit on the tractors together with Bucyrus-Erie Bullgraders or Bulldozers.
Weight of cab is approximately 600 lbs. complete with glass windows.

Agricultural Industries

Reg'd.
950 Duluth Avenue, East, Montreal, Canada

Used Trailers For Sale
20 to 50 tons

LaCrosse	(Full)	Kingham	(Full)
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HUGHES TRAILERS CO.
1029 Brooke Blvd., Reading, Pa.

"UNIVERSAL" ROD-CLAMPS (CAT-HEADS) Also called pig-knuckles. ⅜" — ½" & ¾" sizes. Large stock on hand. Write for quantity lot prices.

HAYS & NICOULIN
939 Franklin St., Louisville, Ky.

3 Slightly used cylinder heads complete with valves and springs for Buda-Lanova diesel engine 6-LD-1611. Box 3215

½-yd. shovel front for Byers Model 60. Good Condition. Blazer-Jenkins Concrete Co., Gallipolis, Ohio. Phone 480.

2 Tractors & Scrapers

Allis model L tractors with lights, starters, bumpers, cast guard pan, hydraulic hoists. One with Continental 7-yd. 2-wheel scraper model CS74. One with Baker 5-yd. 2-wheel scraper model I80. Good condition. Real buy. George M. Pendergast & Co., Milwaukee 4, Wis.

Surplus Swivel Hook Double Sheave Blocks

2 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheave bushed with self lubricating bronze bushings, grooved for ⅝" rope. Groove diameter 12¼" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 284 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheaves bushed with self-lubricating bronze bushings. Grooved for ¾" rope. Groove diameter 10⅛" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 235 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 40 ton "American" 24" swivel hook double sheave block diamond pattern with cast steel sheaves grooved for ⅞" rope. Sheaves to be bushed with plain bronze bushings, with center bored sheave pin and ¼" Alemite hydr. grease fitting No. 1980 equipped with 800 lb. cheek weights and 5½" swivel hook. Total weight of block 1190 lbs. Dwg. BEFP 1-M-6560.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

B-Erie 1¼-yd. gas-air shovel, GA-3, reblt.
B-E 52B 2½-yd. dragl.-shovs., Diesel, elec.
Marion-Monighan, 7 & 3-yd. walking draglines.
Marion 20-yd. dragline, elec., Mod. 5600.
Lorain 1-yd. shovel, gas, Model L-55.
B-E 50B shovels, Diesel, electric, steam.
Porter, Vulcan 18-ton stm. locos., 36" ga.
Locos., 8 to 35 tons, 24", 36", 42", 56½".
A-C gyratory crushers, 27" and 12".
Sturtevant No. 2 rotary fine crusher, reblt.
A-C Superior 54" x 24" crushing rolls.
Buchanan 36" x 42" steel jaw crusher.
Steam power plant, 2250 HP, turbine-gens.
Hydroelectric gen. plant, 1000 KVA, 65' hd.
C.P.T. air compressor, Diesel, 1574 C.F.M.
Shovel front attach., 2½ yd., 52-55B.
Crane boom, 40', 1¼-yd., 46" base width.
B-E 50B parts, 60" hoist gear, drum shaft.

H. Y. SMITH CO.,
828 N. B'way, Milwaukee 2, Wis.

For Sale—

SHASTA DAM AGGREGATE PLANT AND CONVEYOR EQUIPMENT

INCLUDING:

Late model GE motors, 200 hp., 1800 rmp., 2300/4000 volt, slip ring; complete with interlocking controllers.

Western gear reducers, 200 hp., 40 to 1 ratio, herringbone gears.

Dorr hydroseparator, 20' x 4', complete with drive unit.

8", 16" and 20" deepwell turbine pumps and one 3" x 4" two stage high head centrifugal pump. All complete with motors.

30" Bodinson tripper and trestle.

Misc. electrical equipment and supplies.

COLUMBIA CONSTRUCTION CO., INC.
Box 579 Redding, California

For Rent or Sale

⅝ yd. Bucyrus 10-B dragline
½ yd. General shovel dragline
1 yd. Northwest shovel dragline
1½ yd. Koehring dragline, 65 ft. boom
2 yd. Page dragline, 90 ft. boom
3 yd. Monighan dragline, 110 ft. boom
5 yd. Monighan dragline, 140 ft. boom
5 yd. Page dragline, 115 ft. boom
20 yd. Marion dragline, 200 ft. boom

A. W. Nevers — Mt. Pleasant, Iowa

FOR SALE

1 steel hopper base for bin bottom, size 5'x9' complete with Johnson Gate, used on one job only. Can furnish shop drawings for same if interested.

McKEY FANSHER CO., Oskaloosa, Ia.

P-H crane, model 600, 50' boom, 1¼ yd. bucket, working. Mack EF 5 yd. dump, 9:00x20 tires. P. Anzelmo, 85 River St., Carlton Hill, N. J.

1 reconditioned TD-18 International tractor with new cable controlled Bucyrus-Erie Angle Dozer.
1 new generator set powered by Buda 6 cyl. gasoline engine, AC, 25KW, 3 phase, 60 cycles, 220 volts.
30 new Y-91 Continental Red Seal engines.
1 near new portable Greco lubrication unit, gasoline engine driven, complete with electric light plant, mounted on 1 ton, 2 wheel trailer.
1 reconditioned Kohler 1½KW generator set.
1 near new Williams dragline bucket, 1½ cu. yd.
1 near new Williams clamshell bucket, 1 cu. yd.
3 new Westinghouse Flex Arc welders, 400 amps.
6 reconditioned 2" Jaeger centrifugal pumps.
2 reconditioned Whiteman concrete finishing machines.
$25,000 worth genuine new Caterpillar parts priced for quick sale.

SERVICE EQUIPMENT COMPANY
P. O. Box 3035 Shreveport, La.

(For Sale continued on page 248)

For Sale

(Continued from page 247)

1 Bucyrus-Erie 37-B shovel front complete with boom, dipper sticks and bucket with all parts as taken from 37-B machine. Excellent condition. Located in Minn. Price $1250. Apply Delta Farms, Lockport, La.

One late model shovel front complete for Bucyrus-Erie 20-B shovel. Location: Georgia. Box 3214

Two rebuilt Bucyrus-Erie hydraulically operated wheel type scrapers, model H-44, 4 cu. yd. struck measure capacity, mounted on two 11.00X20 pneumatic tires. Price on request. Box 3208

3 yard shovel dipper in good condition, suitable for Bucyrus, Marion or other twin stick machine. Price $1000.
Phone 87 Box 196 Greenville, Ky.

New
BUCYRUS - ERIE
PARTS!
From U. S. Govenment Surplus

Parts For: 15B, 20B, 22B, 33B, 37B, 54B, and 120B. Also: Gears, Pinions, Bearings, Bushings, Lining, etc.

Immediate Delivery From Available Stock. . . . At a Savings While They Last!

FURNIVAL
Machinery Company
5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

MECHANICS • HOME STUDY

Step up your own skill with facts & figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in handy form. Fully illustrated. Easy to Understand. Highly Endorsed. Check book you want for 7 days' Free Examination. Send no Money. Nothing to pay postman. ☐Carpentry $6 • ☐Auto $4 • ☐Oil Burners $1 ☐Sheet Metal $1 • ☐Welding $1 • ☐Refrigeration $4 ☐Plumbing $6 • ☐Masonry $6 • ☐Painting $2 • ☐Radio $4 ☐Electricity $4 • ☐Mathematics $2 • ☐Steam Engineers $4 ☐Machinist $4 • ☐Blueprint $2 • ☐Diesel $2 • ☐Drawing $2. If satisfied you pay only $1 a month until price is paid.
AUDEL, Publishers, 49 W. 23 St., New York 10, N. Y.

8"x8" Steam shovel thrusting engine, new. 66 h.p. at approx. running speed of 320 rpm. Full details furnished upon inquiry to Clyde Equipment Co., 3410 First Ave. South, Seattle 4, Wash., or Bucyrus-Erie Co., Parts Division, South Milwaukee, Wis.

Shovel front and Hercules motor suitable for Bucyrus-Erie 19-B or 20-B. Shovel front complete with ropes and drum lagging. Hercules WXC gasoline motor, complete with radiator, electric starter, electric fuel pump, master clutch, drive sprocket, mounting brackets, and extra magneto. Motor ready to install and operate without delay. Box 3203

DRAGLINE SCRAPER, ½ Cu. Yd. SAUERMAN
Complete—New Condition—Heavy Duty
Price $250
Virginia Boat & Yacht Service
West Norfolk, Virginia

Used dragline attachment for 54-B Bucyrus-Erie. 70' boom, fairlead, including one 2½ cu. yd. medium weight type "AX" Bucyrus-Erie bucket and one 2½ cu. yd. Page type "RC" bucket. Both buckets in good operating condition, available for inspection Sioux Falls, South Dakota. Box 3210.

SURPLUS DIPPERS FOR BUCYRUS-ERIE SHOVELS
2—½ cu. yd. Drag Shovel Dipper—17-B.
3—¾ cu. yd. Skimmer Scoop Dipper—17-B.
1—¾ cu. yd. Welded Dipper—21-B.
1—1¼ cu. yd. Drag Shovel Dipper—38-B.
1—1½ cu. yd. Heavy Duty All Cast Dipper 42-B.
1—2 cu. yd. Rock Dipper—75-B.
F.O.B. Works
Write for any further information desired
BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin

Speeder ½ yd. crane, $3000. Barber-Greene 62A and vibrator, $3800. Slackline ½ yd. complete, $2500. Austin Western bin 21 yd., $800. R. D. 4 cat and end loader $4000. Weldon Lawrence, 320 W. 3rd St., Prophetstown, Ill.

New
DERRICKS
(ALL-STEEL, STIFF-LEG)
7 Available!
From U. S. Government Surplus. 30 Ton at 38 ft. radius, 60 ft. Boom with Bull Wheel.
Priced At a Saving!
FURNIVAL
MACHINERY COMPANY
5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

HELP WANTED

Dragline operator wanted by mining company in Columbia, South America. In replying state age, experience, references, etc. Box 9262

EQUIPMENT WANTED

5 to 10 cubic yard electric powered dragline, walker preferred, 150 to 180 foot boom, must be in good condition, needed in next few months. D. W. & R. A. Mills Limited, Box 418, Minto, N. B. Canada.

Used dragline boom suitable for Lorain 40 No. 2090. Must have fairlead and drum lagging. Box 3206

Will buy shovels, draglines up to 1¼ yd. Also tractors and construction equipment of all types. R. Marchek, 2416 53rd St., Kenosha, Wis. Phone 2-2462.

Trade Literature

(Continued from page 246)

their maintenance. The theme of the film, in 16mm full color with sound, is the close conjunction of our national roadway system with the development of trade and travel throughout the nation, and the problems of maintenance along with the solutions are graphically pointed out.

Where to Get: Advertising Dept. of Caterpillar Tractor Co., Peoria, Ill.

Title: **"Maintenance Chart"**

Subject: Prepared especially for maintenance and service men, this 17 by 22-inch wall chart will serve as a quick guide in servicing and lubricating the Super C Turnapull. The chart shows at what intervals the equipment should be serviced, and lists the points to be checked or adjusted at each servicing. In addition, lubrication points are illustrated by 32 labeled photographs, and the chart carries recommendations as to what kind of lubricants to use and how often.

Where to Get: Advertising Dept., R. G. LeTourneau, Inc., Peoria, Ill., or LeTourneau distributors. Ask for Form TP-128 (Free).

Title: **"Learning to Weld"**

Subject: This 32-page book provides a simple basic approach for anyone interested in making a start in arc welding, and teaches how to weld and assist in applying arc welding to the repair of broken parts, the hard surfacing of worn parts and the building of miscellaneous equipment. Subjects treated include the following: protective clothing and equipment; striking the arc; various welding positions; types of welds; fit-up of parts, and procedures for various welds. Also included are conversion tables on decimal equivalents and thicknesses of metal in both gauge and edge welds.

Where to Get: The Lincoln Electric Co., Cleveland 1, Ohio. Price 25c in U.S.A. and 35c elsewhere.

Title: **"Truck Bulletin"**

Subject: This new illustrated folder describes 10 and 12-ton FWD trucks in the "M" series. Sectional views that reveal chassis and engine features are shown along with a pictorial presentation of various industrial uses of the truck models.

Where to Get: The Four Wheel Drive Auto Co., Clintonville, Wis. (Free).

Title: **"Magnetic Crane Controls"**

Subject: Five types of a-c magnetic controls for handling any type of load are described in this 20-page booklet. Wiring diagrams, performance curves, and an application guide to aid in selecting the best-suited controls are all included in this text. Installation photographs are presented, as well as descriptions and photographs of control panels and associated equipment.

Where to Get: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. Ask for booklet B-3853 (Free).

Title: **"Caterpillar" Diesel Engines at Work**

Subject: This 24-page publication tells of the many and varied applications of the manufacturer's diesel engines in industry. Profusely illustrated, the booklet mentions the uses of diesels in crushing plants, mines, oil pumps and oil drilling, steel mills, pipeline pumping, asphalt plants, waterworks, irrigation pumps, locomotives, ditchers, compressors, cranes, and shovels, etc.

Where to Get: Caterpillar Tractor Co., Peoria 8, Ill. Request Form 9369 (Free).